



2023



BASIC ENVIRONMENTAL IMPACT ASSESSMENT REPORT
APPLICATION FOR A WASTE MANAGEMENT LICENSE IN TERMS OF SECTION 49(1)(A) OF THE NATIONAL
ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008): FOR THE PROPOSED
ACTIVITIES AT A SITE LOCATED AT 30 FRANSEN STREET, CHAMDOR, KRUGERSDORP, GAUTENG
PROVINCE

GDARDE Reference Number:
002/23-24/W0016

Project Number:
DTS-P-23118

Report Number:
NEO-WA-03-101-23-00



Report:	Environmental Impact Assessment Report
Project Title:	Application for a Waste Management License in terms of Section 49(1)(a) of the National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008): for the proposed activities at a site located at 30 Fransen Street, Chamdor, Krugersdorp, Gauteng Province
Location:	30 Fransen Street, Chamdor, Krugersdorp, Gauteng Province
Applicant Name:	Neoserve (Pty) Ltd
Environmental Edge Project Number:	DTS-P-23118
Report Reference Number:	NEO-WA-03-101-23-00
GDARDE Reference:	002/23-24/W0016
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Date:	31 October 2023

Declaration of Interest:

Environmental Edge, or any of its representatives (we) hereby declare:

1. we have no vested interest (present or prospective) in the project that is the subject of this report as well as its attachments. We have no personal interest with respect to the parties involved in this project.
2. we have no bias with regard to this project or towards the various stakeholders involved in this project.
3. we have not received, nor have we been offered, any significant form of inappropriate reward for compiling this report.

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EXECUTIVE SUMMARY



Key points, purpose, brief description of results, conclusions, and recommendations

Neoserve (Pty) Ltd (hereafter referred to as “Neoserve”), the applicant, have appointed Environmental Edge (Pty) Ltd (hereafter referred to as “Environmental Edge”) as an independent Environmental Assessment Practitioners (EAP) to prepare, undertake, and lodge, on their behalf, a Waste Management License Application in terms of Section 49(1)(a) of the National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008) (NEM:WA), for their proposed tyre pyrolysis plant and related activities, with the Gauteng Department of Agriculture, Rural Development and Environment (GDARDE). These activities are planned to take place at 30 Fransen Street, Chamdor, Krugersdorp, Gauteng Province.

In terms of the list of waste management activities that have, or are likely to have, a detrimental effect on the environment, published under NEM:WA in GN R.921 as amended, the proposed activities trigger Category A (3), Activities (5), (6), (7), and (12).

In addition, the proposed activities would also trigger sub-category 4.21 (Metal Recovery) and 8.1 (Thermal Treatment of Hazardous and General Waste), of Category 4 and 8, respectively in terms of Section 21 of the National Environmental Management: Air Quality Act (Act No. 39 of 2004) (NEM:AQA).

As such, the development requires both an Waste Management License (WML) in terms of NEM:WA and an Atmospheric Emissions License (AEL) in terms of NEM:AQA. The AEL application shall be submitted to the West Rand District Municipality in terms of Section 41(1) (a) of NEM:AQA.

Environmental Edge has compiled this Basic environmental impact assessment (BA) report on behalf of Neoserve in terms of Part 2: Basic Assessment of Section 19 of the EIA Regulations of 2014, as amended on 7 April 2017 (EIA Regulations), in terms of Chapter 5 of the NEMA. The impacts associated with the proposed development and its associated activities have been identified, described, and scientifically translated in this report.

Relevant environmental issues have been identified and assessed and rated according to their significance. Mitigation measures have been considered where relevant, and an Environmental Management Programme has been developed.

During the rating and ranking procedure of possible impacts, no impact had a “no-go” implication for aspects of the project and all impacts could be successfully countered by appropriate mitigation. Significance ratings following mitigation remain *Negative Low*. Therefore, it is recommended that the continuation of the activity(ies) be approved.

Summary of Environmental Impact Significance Ratings.

Assessed Impact	Rating before Mitigation	Rating Post-Mitigation
Air quality (Operation)	Negative Low Impact	Negative Low Impact
Socio-economic (Operation)	Positive Medium Impact	N/A
Solid waste (Construction/ Commissioning & Operation)	Negative Low Impact	Negative Low Impact
Resource usage (Construction/ Commissioning & Operation)	Negative Low Impact	Negative Low Impact
Fire Hazard (Construction/ Commissioning)	Negative Medium Impact	Negative Low Impact
Fire Hazard (Operation)	Negative Low Impact	Negative Low Impact

The proposed project has a significant need and desirability as it provides mitigations against the increasing number of recorded waste tyres and its associated challenges in the country.

Additionally, the proposed development and its existence will significantly influence the country's tyre pyrolysis market in addition to having favourable socio-economic effects through the creation of jobs and contributions to the West Rand District Municipality's overall GDP.

The following aspects were taken into consideration when coming to the conclusions:

- The site is located within an appropriate “Industrial 2” zoned area;



-
- The activity provides socio-economic benefits to its employees and the wider economy of the manufacturing industry;
 - The need and desirability of such processes to mitigate against the increasing waste tyre problems in the country;
 - The pollution associated with the functioning of the activity is minimal and does not have a significant impact on the surrounding environment.
 - No impacts are rated high significance prior to or following mitigation.
 - Neoserve has expressed its commitment to ensuring all possible environmental mitigation measures are incorporated into the operations of the activity, and that the company aims to abide by all relevant environmental legislation.

It is recommended that the activity be approved, subject to the following:

- All mitigation measures as detailed in this report are to form an extension of the WML, thus ensuring applicant/operator adherence;
- The specific conditions as detailed in the WML are to be enforced on site;
- The Environmental Management Programme should become a binding document on site. The EMPr must also be binding to all contractors associated with Neoserve who would be conducting any works at the site.
- An appropriately qualified and accredited external Environmental Control Officer should be appointed to audit the project at least once every twelve (12) months. A compliance audit report must be compiled against the conditions of the WML and must be submitted to the authorities within sixty (60) days after completion.
- Incidences of non-compliance by employees, contractors and site operators should be dealt with in a manner so as to ensure practical control and avoidance of any transgressions.



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LIST OF ABBREVIATIONS

AEL	Air Emissions License
AGIS	Agricultural Geo-Referenced Information System
AQA	Air Quality Assessment
AQIA	Air Quality Impact Assessment
AQMP	Air Quality Management Plan
AQSR	Air Quality Sensitive Receptor
As	Arsenic
ASTM D1739	The American Society for Testing and Materials standard method for collection and measurement of dust fall (Settleable Particulate Matter)
C-Plan	Gauteng Conservation Plan
C&RR	Comments and Response Report
CARA	Conservation of Agricultural Resources Act No. 43 of 1983
CBA	Critical Biodiversity Area
CBD	Central Business District
CH ₄	Methane
Co	Cobalt
CO	Carbon Monoxide
CO ₂ -eq	Carbon Dioxide equivalents
Cr	Chromium
Cu	Copper
DEA	Department of Environmental Affairs
DEFF	Department of Environment, Forestry and Fisheries
DoI	Declaration of Interest
EA	Environmental Authorisation
ECA	Environment Conservation Act (Act No 73 of 1989)
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMPr	Environmental Management Programme
ESA	Ecological Support Area
GDARD	Gauteng Department of Agriculture and Rural Development
GHG	Greenhouse Gas
GN	Government Notice
GPS	Geographic Positioning System
GWIS	Gauteng Waste Inventory System
HCl	Hydrogen Chloride
HPA	Highveld Priority Area
MAP	Mean Annual Precipitation
Mn	Manganese
N ₂ O	Nitrous Oxide
NAEIS	National Atmospheric Emissions Inventory System
NDP	National Development Plan
NEM:AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:BA	National Environmental Management: Biodiversity Act 2004, (Act No. 10 of 2004)
NEM:PAA	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)
NFEPA	National Freshwater Ecosystem Priority Area



NHRA	National Heritage Resources Act No. 25 of 1999
Ni	Nickel
NH ₃	Ammonia
NO ₂	Nitrogen Dioxide
NWA	National Water Act 1998 (Act No. 36 of 1998)
O ₃	Ozone
PAEL	Provisional Air Emissions License
Pb	Lead
PCDD/PCDF	Dioxins and Furans
PM	Particulate Matter
PPP	Public Participation Process
SAGERS	South African Greenhouse Gas Emissions Reporting System
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANS	South African National Standards
SAAQIS	South African Air Quality Information System
Sb	Antimony
SO ₂	Sulphur Dioxide
Tl	Thallium
TOC	Total Organic Compounds
TVOC	Total Volatile Organic Compounds
WRDM	West Rand District Municipality
V	Vanadium
VOC	Volatile Organic Compounds



1. INTRODUCTION



Appointment
Background
Purpose

Neoserve (Pty) Ltd (hereafter referred to as “Neoserve”), the applicant, have appointed Environmental Edge (Pty) Ltd (hereafter referred to as “Environmental Edge”) as an independent Environmental Assessment Practitioners (EAP) to prepare, undertake, and lodge, on their behalf, a Waste Management License Application in terms of Section 49(1)(a) of the National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008) (NEM:WA), for their proposed tyre pyrolysis plant and related activities, with the Gauteng Department of Agriculture and Rural Development (GDARD). These activities are planned to take place at 30 Fransen Street, Chamdor, Krugersdorp, Gauteng Province.

In terms of the list of waste management activities that have, or are likely to have, a detrimental effect on the environment, published under NEM:WA in GN R.921 as amended, the proposed activities trigger Category A 3, Activities (5), (6), (7) and (12):

5. *The recovery of waste including the refining, utilisation, or co- processing of waste in excess of 10 tons but less than 100 tons of general waste per day or in excess of 500kg but less than 1 ton of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises.*
6. *The treatment of general waste using any form of treatment at a facility that has the capacity to process in excess of 10 tons but less than 100 tons.*
7. *The treatment of hazardous waste using any form of treatment at a facility that has the capacity to process in excess of 500kg but less than 1 ton per day excluding the treatment of effluent, wastewater or sewage.*
12. *The construction of a facility for a waste management activity listed in Category A of this Schedule (not in isolation to associated waste management activity).*

In addition, the proposed activities would also trigger sub-category 4.21 (Metal Recovery) and 8.1 (Thermal Treatment of Hazardous and General Waste), of Category 4 and 8, respectively in terms of Section 21 of the National Environmental Management: Air Quality Act (Act No. 39 of 2004) (NEM:AQA).

4.21. Metal Recovery – The recovery of metal from any form of scrap material by the application of heat. All installations.

8.1. Thermal Treatment of Hazardous and General Waste – Facilities where general and hazardous waste are treated by the application of heat. All installations treating 10 kg per day of waste.

As such, the development requires both an Waste Management License (WML) in terms of NEM:WA and an Atmospheric Emissions License (AEL) in terms of NEM:AQA. The AEL application shall be submitted to the West Rand District Municipality in terms of Section 41(1) (a) of NEM:AQA.

Environmental Edge has compiled this Basic environmental impact assessment (BA) report on behalf of Neoserve in terms of Part 2: Basic Assessment of Section 19 of the EIA Regulations of 2014, as amended on 7 April 2017 (EIA Regulations), in terms of Chapter 5 of the NEMA. The impacts associated with the proposed development are herein identified, described, and scientifically translated.

1.1. Project Applicant

Neoserve (Pty) Ltd
2023/755315/07

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B.Sc. (Hons) Environmental Science (Univ. of Pretoria)

Sindiso Lubisi is a Registered EAP (Reg. 2020/1401) with the Environmental Assessment Practitioners Association of South Africa (EAPASA) and is also a Professional Natural Scientist (Reg. 122081) with the South African Council of Natural Scientists (SACNASP).

He is a Senior Environmental Assessment Practitioner (EAP) at Environmental Edge with vast experience in the environmental assessment and management field. His experience spans across various projects including; Environmental Impact Assessments, Basic Assessments, Atmospheric Emissions Licences applications and audits, Environmental Authorisation implementation programmes, Section 22A Applications and Reporting, Section 24G Applications as well as Reporting, Waste Management Licences applications and audits, Environmental Management Programmes, Waste Management Plans, Environmental Authorisation Compliance Audits, Environmental and Social Management Systems development and implementation, and offering Environmental Management Training.

1.3. Objectives/ Purpose of this Document

This Basic Assessment Report (BAR) has been prepared as part of the impact assessment process to fulfil the required objectives of a basic assessment process as outlined in Section 2 of Appendix 1 of the NEMA EIA Regulations of 2014 (as amended). The following are the objectives met in this regard –

- (a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- (b) identify the alternatives considered, including the activity, location, and technology alternatives;
- (c) describe the need and desirability of the proposed alternatives;
- (d) through the undertaking of an impact and risk assessment process, inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine –
 - (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - (ii) the degree to which these impacts –
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources; and
 - (cc) can be avoided, managed or mitigated; and
 - (iii) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to –
 - (iv) identify and motivate a preferred site, activity and technology alternative;
 - (v) identify suitable measures to avoid, manage or mitigate identified impacts; and
 - (vi) identify residual risks that need to be managed and monitored.

Furthermore, this report contains information as outlined in Section 3(1) of Appendix 1 of the NEMA EIA Regulations, 2014 (as amended), which is necessary for a proper understanding of the process, informing all preferred alternatives (including location alternatives), the scope of the assessment, and the consultation process to be undertaken in a basic assessment process. The content requirements of this report, as well as the report sections which fulfil these requirements, are shown in Table 1-1 below.

Table 1-1: Basic Assessment Contents and Sections in this Report.

Content Requirements	Applicable Section
a) details of- <ul style="list-style-type: none"> i. the EAP who prepared the report; and ii. the expertise of the EAP, including a curriculum vitae; 	Details of the EAP and project team are included in section 1.2. The expertise (including curriculum vitae) of the EAP and project team are included in Appendix 2.
b) the location of the development footprint of the activity on the approved site as contemplated in the accepted scoping report, including: <ul style="list-style-type: none"> i. the 21-digit Surveyor General code of each cadastral land parcel; ii. where available, the physical address and farm name; iii. where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties; 	The location of the proposed project is detailed in section 3.3 of this report.
c) a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is- <ul style="list-style-type: none"> i. a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or ii. on land where the property has not been defined, the coordinates within which the activity is to be undertaken; 	A map of the regional locality and coordinates are shown in section 3.3. Additionally, all project maps are included in Appendix F.
d) a description of the scope of the proposed activity, including- <ul style="list-style-type: none"> i. all listed and specified activities triggered; ii. a description of the activities to be undertaken, including associated structures and infrastructure; 	The listed and specified activities triggered as per the NEMA are detailed in section 3.6. The technical project description is included in section 3.5. This includes a description of activities to be undertaken, including associated structures and infrastructure.
e) a description of the policy and legislative context within which the development is proposed including – <ul style="list-style-type: none"> (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments; 	A description of all legal requirements and guidelines is provided in section 2. This includes key legal and administrative requirements as well as key development strategies and guidelines.
f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Section 4 describes the need and desirability of the project.
g) a motivation for the preferred site, activity and technology alternative;	Section 3.7.3.
h) a full description of the process followed to reach the proposed preferred alternative within the site, including – <ul style="list-style-type: none"> i. details of all the alternatives considered; ii. details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; iii. a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; iv. the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; v. the impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts- <ul style="list-style-type: none"> (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; 	Alternatives have been discussed in section 3.7. It should however be noted that no site or layout alternatives have been considered and/or assessed as part of this impact assessment process due to the facts mentioned in the section. Public Participation records are to be contained in section 9 and Appendix I of the final report. Environmental attributes of the site and possible impacts are explained in sections 7 under the Description and Sensitivity of the Receiving Environment with those relevant, assessed in section 8 of the report.

<ul style="list-style-type: none"> vi. the methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; vii. positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; viii. the possible mitigation measures that could be applied and level of residual risk; ix. the outcome of the site selection matrix; x. if no alternatives, including alternative footprints for the activity were investigated, the motivation for not considering such and xi. a concluding statement indicating the location of the preferred alternative development footprint within the approved site as contemplated in the accepted scoping report; 	
<ul style="list-style-type: none"> i) a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including— <ul style="list-style-type: none"> i. a description of all environmental issues and risks that were identified during the environmental impact assessment process; and ii. an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures; 	Description of impact assessment method is included in section 8.1 of this report.
<ul style="list-style-type: none"> j) an assessment of each identified potential impact and risk, including— <ul style="list-style-type: none"> i. cumulative impacts; ii. the nature, significance and consequences of the impact and risk; iii. the extent and duration of the impact and risk; iv. the probability of the impact and risk occurring; v. the degree to which the impact and risk can be reversed; vi. the degree to which the impact and risk may cause irreplaceable loss of resources; and vii. the degree to which the impact and risk can be mitigated; 	Assessment of potential impacts and recommendations have been included in section 8.3.
<ul style="list-style-type: none"> k) Where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 and an indication as to how these findings and recommendations have been included in the final assessment report; 	Specialist studies are incorporated in each relevant impact assessment in section 8.3 of this report and copies of full reports are included in Appendices G.
<ul style="list-style-type: none"> l) an environmental impact statement which contains— <ul style="list-style-type: none"> i. a summary of the key findings of the environmental impact assessment; ii. a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and iii. a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives; 	A summary of impacts and recommendations is included in section 10.1 of this report.
<ul style="list-style-type: none"> m) based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr; 	Relevant mitigation recommendations have been made in section 10 of this report and more described in the attached EMPr (Appendix K).
<ul style="list-style-type: none"> n) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation; 	No conditional aspects have been identified. Only mitigation and management recommendations have been made in section 10, the EMPr, as well as section 12 of this report.
<ul style="list-style-type: none"> o) a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed; 	Where relevant, the EAP's assumptions and those made by Specialists have been included in section 5 of this report.
<ul style="list-style-type: none"> p) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation; 	Opinions have been made in the conclusion in section 11 and 12 of this report.
<ul style="list-style-type: none"> q) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised; 	Not relevant. Activity includes operational aspects.

<p>r) an undertaking under oath or affirmation by the EAP in relation to—</p> <ul style="list-style-type: none"> (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties; 	<p>The EAP affirmation and declaration of interest is included in Appendix C. Specialist studies' findings have been considered and incorporated in this report and copies of reports are included in Appendix G. Comments and opinions which received from I&APs shall be considered, responded to, and incorporated in the final BAR.</p>
<p>s) where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;</p>	<p>Not applicable. The site infrastructure is perceived as permanent with the operations planned to take place indefinitely to a point where it may be sold to a potential buyer(s). As such, waste generated from decommissioning the site facilities are rather explained as mitigations in the EMPr.</p>
<p>t) any specific information that may be required by the competent authority; and</p>	<p>None communicated thus far.</p>
<p>u) any other matter required in terms of section 24(4)(a) and (b) of the Act.</p>	<p>All requirements in terms of section 24(4)(a) and (b) of the Act have been met in this report.</p>

2. LEGAL REQUIREMENTS

In the subsections below, key legislation and guidelines that may have an impact on the activities from an environmental perspective are described. It should be noted that this is not an exhaustive list, but rather aims to identify pertinent sections of relevant legislation.

2.1. Legislation

2.1.1. Constitution of the Republic of South Africa (Act No. 108 of 1996)

The Constitution of the Republic of South Africa (Act No. 108 of 1996) is the supreme law of the Republic of South Africa and provides the legal foundation for the existence of the republic. It also sets out the rights and duties of its citizens and defines the structure of the government.

With reference to the environment, the constitution has afforded citizens environmental rights in Section 24. According to Section 24 of the Constitution, *everyone has the right –*

- *To an environment that is not harmful to their health or well-being; and*
- *To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –*
 - o *prevent pollution and ecological degradation;*
 - o *promote conservation; and*
 - o *secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.*

With regard to this right, a safe environment is guaranteed to every citizen and the State needs to ensure that the environment is preserved *while fostering justifiable economic and social growth* through the use of sustainable development principles.

Various environmental laws and regulations have been promulgated in order to give effect to these privileges. Individuals, companies and the state are expected to comply with these laws and regulations and, if they do not comply, are liable for prosecution.

In view of the above, Neoserve would have to ensure that their activity(ies) is ecologically sound and that economic and social growth is demonstrated.

Moreover, they will need to ensure that reasonable steps are taken, where relevant, in order to prevent pollution as a result of the activity(ies).



Legal Requirements
NEMA
NEMAQA
etc.

2.1.2. National Environmental Management Act (NEMA) (Act No. 107 of 1998), as amended

The National Environmental Management Act (Act no.107 of 1998), referred to as NEMA, provides South Africa’s framework for environmental legislation. All amendments thereafter have been considered herein.

The act provides for:

- co-operative environmental governance by establishing principles for decision-making on matters affecting the environment;
- institutions that will promote co-operative governance and procedures for coordinating environmental functions exercised by organs of state;
- the prohibition, restriction or control of activities which are likely to have a detrimental effect on the environment; and
- matters connected therewith.

Sections 24 and 44 of NEMA make provision for the promulgation of regulations that identify activities that may not commence without an EA. The result being that NEMA now governs the EIA process with the said promulgation of the EIA Regulations in December 2014, as amended on 07 April 2017. This environmental impact assessment has therefore been undertaken in accordance with the NEMA EIA Regulations.

Activities in terms of Listing Notice 2 of GN R.984 as amended by GN R. 325 of 07 April 2017, would be triggered **Neoserve’s** proposed operations. However, the proposed project is excluded by virtue of triggering activities which are included in the list of waste management activities published in terms of section 19 of the NEM:WA. Table 2-1 below lists the activity with reasons.

Table 2-1: Listed Activities NOT triggered by proposed activities.

LISTED ACTIVITIES (NEMA) – GN R.983 as amended by GN R. 327 of 07 April 2017	NOTES (REASONS)
<p><u>Listing Notice 1 - Activity 34:</u> The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding—</p> <ul style="list-style-type: none"> (i) activities which are identified and included in Listing Notice 1 of 2014; (ii) activities which are included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; (iii) the development of facilities or infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less; or (iv) where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic metres per day. 	<p>Proposed activity also triggers activities listed under the NEM:WA in GN R.921 as amended including Category A (3), Activities (5), (6), and (12): Therefore, the proposed activities are excluded from this Listing Notice 1 Activity.</p>

2.1.3. National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), as amended (NEM:AQA)

The National Environmental Management: Air Quality Act, 2004 (No. 39 of 2004), as amended (referred to as NEM: AQA), has shifted the approach of air quality management from source-based control to receptor-based control. The main objectives of the Act are to;

- to protect the environment by providing reasonable measures for —
 - i. the protection and enhancement of the quality of air in the Republic;
 - ii. the prevention of air pollution and ecological degradation; and
 - iii. securing ecologically sustainable development while promoting justifiable economic and social development; and



- generally to give effect to section 24(b) of the Constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and wellbeing of people.

NEM:AQA provides for the establishment and formulation of National Ambient Air Quality Standards for substances or mixtures of substances that pose a health, well-being or environmental threat. It is possible to create more rigorous standards at the provincial and local levels.

The control and management of emissions in the NEM:AQA relates to the listing of activities that are sources of **emissions and the issuing of AELs. Listed activities are defined as activities which “result in atmospheric emissions and are regarded as having a significant detrimental effect on the environment, including human health”.** Listed activities have been identified by the Minister of the Department of Forestry, Fisheries and Environment (DFFE) and atmospheric emission standards have been established for each of these activities. These listed activities require an AEL to operate. The issuing of AELs for listed activities is normally the responsibility of the Metropolitan and District Municipalities, except for those associated with mining operations.

In addition, the Minister may declare any substance contributing to air pollution as a priority pollutant. Any industries or industrial sectors that emit these priority pollutants will be required to implement a Pollution Prevention Plan. Municipalities are **required to “designate an air quality officer to be responsible for coordinating matters pertaining to air quality management in the Municipality”.** The appointed Air Quality Officer is responsible for the issuing of AELs.

The proposed activities would also trigger sub-category 4.21 (Metal Recovery) and 8.1 (Thermal Treatment of Hazardous and General Waste), of Category 4 and 8, respectively in terms of Section 21 of the NEM:AQA.

4.22. Metal Recovery – The recovery of metal from any form of scrap material by the application of heat. All installations.

8.2. Thermal Treatment of Hazardous and General Waste – Facilities where general and hazardous waste are treated by the application of heat. All installations treating 10 kg per day of waste.

Emissions emanating from production processes at the facility are therefore required to comply with the minimum emission standards for new plants in terms of Section 21 of NEM:AQA.

2.1.4. National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)

The promulgation of the National Environmental Management Waste Act (NEM:WA) (Act no. 59 of 2008) sought to consolidate various legislation concerning waste within South Africa in order to:

- protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development;
- provide for institutional arrangements and planning matters;
- provide for national norms and standards for regulating the management of waste by all spheres of government;
- provide for specific waste management measures;
- provide for the licensing and control of waste management activities;
- provide for the remediation of contaminated land;
- provide for the national waste information system; and
- provide for compliance and enforcement; and to provide for matters connected therewith.

The objectives of this Act are:

- to protect health, well-being and the environment by providing reasonable measures for –
- minimising the consumption of natural resources;
- avoiding and minimising the generation of waste;

- reducing, re-using, recycling and recovering waste;
- treating and safely disposing of waste as a last resort;
- preventing pollution and ecological degradation;
- securing ecologically sustainable development while promoting justifiable economic and social development;
- promoting and ensuring the effective delivery of waste services;
- remediating land where contamination presents, or may present, a significant risk of harm to health or the environment; and
- achieving integrated waste management reporting and planning;
- to ensure that people are aware of the impact of waste on their health, well-being and the environment;
- to provide for compliance with the measures set out in paragraph (a); and
- generally, to give effect to section 24 of the Constitution in order to secure an environment that is not harmful to health and well-being.

Waste management activities that are listed in regulations published under NEM:WA may not be undertaken without a Waste Management Licence (WML). The listed activities for which a WML is required are contained in Government Notice (GN) 921 published in Gazette No 37083 on 29th of November 2013, as amended. Category A activities require a WML and a Basic Assessment (BA) must be conducted, and Category B activities require a WML and a full Scoping and Environmental Impact Assessment (EIA) must be conducted. Category C activities are not required to have an WML but need to comply with the National Norms and Standards.

In terms of the list of waste management activities that have, or are likely to have, a detrimental effect on the environment, published under NEM:WA in GN R.921 as amended, the proposed activities trigger Category A (3), Activities (5), (6), and (12):

- 8. The recovery of waste including the refining, utilisation, or co-processing of waste in excess of 10 tons but less than 100 tons of general waste per day or in excess of 500kg but less than 1 ton of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises.*
- 9. The treatment of general waste using any form of treatment at a facility that has the capacity to process in excess of 10 tons but less than 100 tons.*
- 13. The construction of a facility for a waste management activity listed in Category A of this Schedule (not in isolation to associated waste management activity).*

The proposed activities must obtain a WML from the GDARD prior to commencement.

2.1.5. Greenhouse Gas (GHG) Regulations

In terms of NEM:AQA, GHG means the gaseous constituents of the atmosphere, both natural and anthropogenic that absorbs and re-emits infrared radiation.

The following six greenhouse gases were declared a priority for air pollution in South Africa on 14 March 2014 by the Department of Environmental Affairs (Government Gazette No. 37421):

- Carbon dioxide (CO₂)
- Methane (CH₄)
- Nitrous Oxide (N₂O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)

- Sulphur hexafluoride (SF₆)

The Department of Environmental Affairs has released the National GHG Emission Reporting Regulations (Government Gazette No.40762, dated 3 April 2017). A individual defined in Annexure 1 of these Regulations as a Category A data provider shall register their facilities by filling in the form set out in Annexure 2 and send an inventory of GHG emissions and activity data in the requested format.

A pollution prevention plan will be required should the development:

- a) Undertake any of the following activities identified in Annexure A of the National GHG Emission Reporting Regulations (Government Gazette No. 40762 of 3 April 2017), which involves the direct emission of GHG in excess of 0.1 Megatonnes (Mt) annually measured as carbon dioxide equivalents (CO₂-eq); or
- b) Undertake any of the following activities identified in Annexure A of the National Pollution Prevention Plan Regulations as a primary activity.

In order to allow for submissions and keeping of GHG emissions inventory, the DEFF has set up the South African Greenhouse Gas Emissions Reporting System (SAGERS) which is a Greenhouse Gas Reporting Module of the National Emissions Inventory System (NAEIS).

SAGERS portal is a web-based platform for the registration and submission of GHG emissions data by category A data providers in terms of GHG Reporting Regulations 3 April 2017 as amended and promulgated under the NEM:AQA.

Objectives include:

- Providing a user-tailored platform for category A data providers to register and report their annual GHG emissions data and the associated activity data.
- Providing methodological guidance on the quantification of GHG emissions and the embedded parameters for assessing the annual GHG emissions.
- Facilitating easy access to the parameters and GHG emission factors database embedded into the system.
- Serving as an information hub for data providers for accessing information relevant to the registration and reporting under the GHG Reporting Regulations.
- The portal provides relevant guidance, templates, guidelines, and information relating to compliance under the GHG Reporting Regulations 2017 published under GNR 275 in Government Gazette 40762 of 03 April 2017 promulgated under the NEM:AQA.

As such, should Neoserve operate above the prescribed thresholds, they must register on the SAGERS system and report their GHG emissions by the 31st of March of every year.

2.1.6. National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004 as amended) (NEM:BA)

The purpose of the Biodiversity Act is to provide for the **management and conservation of South Africa's** biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed.

NEM:BA is applicable to this application for environmental authorisation, in the sense that it requires the project applicant to consider the protection and management of local biodiversity. This report serves as an ecological assessment being undertaken to assess the flora and fauna for the proposed development area.

In terms of the Biodiversity Act, the “developer” has a responsibility for:

- The conservation of endangered ecosystems and restriction of activities according to the categorisation of the area (not solely by listed activities as specified in the EIA regulations).

- Promote the application of appropriate environmental management tools in order to ensure integrated environmental management of activities; thereby ensuring that all development within the area is in line with ecological sustainable development and protection of biodiversity.
- Limit further loss of biodiversity and conserve endangered ecosystems.
- A person may not carry out a restricted activity involving a specimen of a listed threatened or protected species without a permit issued in terms of Chapter 7 of NEM: BA (Act No. 10 of 2004).
- **Such activities include any that are “of a nature that may negatively impact on the survival of a listed threatened or protected species”.**

The proposed facility and the surrounding are mainly industrial with all grounds paved and is already rid of natural vegetation. Therefore, the proposed development would not have any biodiversity impacts – and no further studies will be conducted in this regard.

2.1.7. Ambient Air Quality Standards and Dust Deposition Standards

The final revised South African National Ambient Air Quality Standards (NAAQS) were published by the Minister of Water and Environmental Affairs in the Government Gazette on 24 of December 2009 and included a margin of tolerance (i.e. frequency of exceedance) and implementation timelines linked to it. SA NAAQS for PM_{2.5} were published on 29 July 2012. The NAAQS closely follow the **World Health Organization’s (WHO)** interim targets, which are targets for developing countries.

National Dust Control Regulations (NDCR) were issued by the DFFE on the 1st of November 2013, with the aim of prescribing general measures for dust control in all areas. The NDCR prohibit activities which give rise to dust in such quantities that the dustfall at the boundary or beyond the boundary of the premises where it originates. The regulated standards for dust-fall are as follows:

- 600 mg/m²/day averaged over 30 days in residential areas, measured using reference method ASTM D1739.
- 1 200 mg/m²/day averaged over 30 days in non-residential areas, measured using reference method ASTM D1739.

Updated draft NDCR were published on 25 May 2018. The regulations prescribe the method that should be used for undertaking dustfall monitoring, which includes the use of dust bucket stations with a wind shield.

Table 2-3 and Table 2-4 below provide assessment guidelines and standards for criteria air pollutants and dustfall considered in this assessment, respectively.

Table 2-2: Assessment of guidelines and standards for criteria air pollutants considered in the assessment.

Pollutant	Averaging (Exposure period)	Limit Value (µgm ³)	Limit Value (ppb)	Limit Reference Value	Permitted frequency of exceedance
PM ₁₀	24-hour	75	Not applicable	NAAQS	4
	1-year	40	Not applicable	NAAQS	0
PM _{2.5}	24-hour	40	Not applicable	NAAQS	0
	1-year	20	Not applicable	NAAQS	0
SO ₂	1-hour	350	134	NAAQS	88
	24-hour	125	48	NAAQS	4
	1-year	50	19	NAAQS	0
NO ₂	1-hour	200	106	NAAQS	88
	1-year	40	21	NAAQS	0

Table 2-3: Assessment of guidelines and standards for dustfall considered in the assessment.

Restriction Areas	Averaging (Exposure period)	Dust-fall rate (D) ⁽¹⁾	Limit Value (µgm ³)	Limit Reference Value	Permitted frequency of exceedance
Residential Areas	1 month (30±2-day average)	D < 600	Not applicable	NDCR (2013)	Two within a year, no two sequential months ⁽²⁾



Non-Residential Areas	1 month (30±2-day average)	600 < D < 1200	Not applicable	NDCR (2013)	Two within a year, no two sequential months ⁽²⁾
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Notes:

(1) Dustfall rate in mg/m²/day

(2) Per dustfall monitoring site.

Should a facility exceed the regulated dustfall standards, a dust management plan (DMP) must be developed and submitted to the air quality officer for approval, within three (3) months after submitting a dustfall monitoring report. The DMP must be implemented within a month after of the date of approval, and be updated annually, unless otherwise specified by the air quality officer.

2.1.8. Waste Tyre Regulations, 2017

The Waste Tyre Regulations, 2017, promulgated in terms of section 69(1)(b), (e), and (ee) of the NEM:WA, requires that no person may –

- (a) Manage waste tyres in a manner which does not comply with the Regulations;
- (b) Recover or dispose of a waste tyre in a manner that is likely to cause pollution of the environment or harm to health and well-being;
- (c) Dispose of a waste tyre at a waste disposal facility;
- (d) Recover any financial contribution in terms of a waste tyre management plan from a subscriber to the plan, unless authorised by law; or
- (e) Export waste tyres in whatever form unless the exportation of such waste tyres is authorised by the Minister in writing.

The following persons must register with the Bureau, in a format specified by the Bureau, within 90 days after the commencement of the Regulations:

- (a) A tyre producer not registered in terms of the repealed regulations as contemplated in regulation 13(a);
- (b) A tyre dealer;
- (c) A person in control of a collection point where tyres may be collected;
- (d) A waste tyre stockpile owner;
- (e) A waste tyre processor;
- (f) An owner or operator waste tyre pre-processing facility;
- (g) A depot owner or operator;
- (h) A micro-collector of waste tyres;
- (i) A waste transporter; and
- (j) An owner or operator of a waste tyre storage site.

With regards to the proposed activities, Neoserve would need to register with the Bureau in terms of section 5(e) of the Waste Tyre Regulations.

2.1.9. Other Relevant Legislation

- Waste Classification and Management Regulations (GN 634, 23 August 2013);
- Norms and Standards for the Storage of Waste (29 November 2013);
- Gauteng Conservation Plan Version 3.3 (C-Plan 3.3);
- Development Facilitation Act (Act No. 67 of 1995);
- Water Services Act (Act No. 108 of 1998);

- Municipal Systems Act (Act No. 32 of 2000);
- Gauteng Noise Control Regulations (GNR. 5479 of 20 August 1999);
- National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004);
- The National Water Act, 1998 (Act No. 36 of 1998);
- National Heritage Resources Act, 1999 (Act No. 25 of 1999);
- South African National Standards, SANS 10103 of 2008;
- Occupational Health and Safety Act (Act No. 85 of 1993).

2.1.10. Key Development Strategies and Guidelines

- Gauteng Growth Development Strategy;
- Gauteng Environmental Management Framework;
- Gauteng Development Plan;
- GDARD Gauteng Sustainable Development Guideline, 2017;
- Mogale City Land Use Scheme 2019;
- Spatial Planning and Land Use Management Act, 2013;
- Spatial Planning and Land Use Management Splum By-law.



Project
description
Site information
Technical
processes

3. PROJECT DESCRIPTION

3.1. Project Background

The facility at the proposed address, 30 Fransen Street, Chamdor, Krugersdorp, Gauteng Province, has been used for injection rubber molding by a previous tenant. Neoserve has now acquired rights to the facility with the intention of undertaking the proposed tyre pyrolysis activities as described in section 3.2 below.

By triggering activities listed in terms of NEM:WA, the proposed development must obtain a WML through a BA process from the GDARDE. As such, any work related to the commissioning and preparation of the facility for the proposed activities have not commenced, pending the necessary approvals / authorisations.

3.2. Land Zoning

Neoserve's proposed facility is situated within an area currently zoned as "Industrial 2" in terms of the Mogale City Land Use Scheme, 2019. Permitted uses in this area includes "industrial purposes, noxious industries, public garages, public or private parking areas, shops, business purposes, commercial purposes, builders' yard, building material storage".

The area is in-line with the Land Use Scheme requirements and does not need to be rezoned. Please refer to the zone's allowed land uses in Table 3-1 below.

The Gauteng Environmental Management Framework, 2014 (GPEMF) lists the area where the proposed site sits as Zone 5: Industrial and large commercial focus zone. Zone 5 is meant to streamline non-polluting industrial and large-scale commercial (warehouses etc.) activities in areas that are already used for such purposes and areas that are severely degraded but in close proximity to required infrastructure (such as old and even current mining areas) (Figure 3-1).

Noxious activities in this zone may be conditionally authorised if they are found to have low environmental impacts and if they are aligned with the general activities in the surrounding area.



Table 3-1: Industrial 2 Land use zone in terms of the Mogale City Land Use Scheme 2019.

Code: I2	INDUSTRIAL 2			Colour code: R=169; G=0; B=230
Objectives: <ul style="list-style-type: none"> • Provide appropriate locations for heavy and noxious industries. • Provide opportunities for local economic development and employment opportunities. • Ensure that the location and development of these sites do not negatively impact on the natural environment or watercourses located in proximity 				
USE OF LAND AND BUILDINGS				
Primary Uses:		Written Consent	Special Consent Uses	Land uses prohibited
<ul style="list-style-type: none"> • Agricultural Industry • Brick Yard • Builders Yard • Canteen • Car-Wash • Coal Yard • Distribution Centre • Filling Station • Fuel Depot • Government Purposes • Industry • Light Industry • Motor Grave Yard • Motor Sales Market • Municipal Use • Offices • Panel Beater • Public Garage • Storage • Scrapyard • Transportation Enterprise • Truck Stop • Utility Service • Vehicle Workshop • Warehouse • Educational Facility • Industrial Incubator • Canteen • Shop • Veterinary Use • Place of Refreshment 		<ul style="list-style-type: none"> • Institutional Use • Private Club • Private Open Space • Public Open Space 	<ul style="list-style-type: none"> • Risk Activity • Funeral Parlour • Noxious Use 	Any use not mentioned under primary uses, Written Consent and Consent Uses
CONTROLS ON THE EXTENT OF THE DEVELOPMENT				
Density	Coverage	FAR	Height	Other
Not Applicable	85%	As determined by Local Authority	As determined by Local Authority	As approved by the Municipality
CONTROLS REGARDING BUILDING LINES			PARKING AND LOADING REQUIREMENTS	
Stand Size	Street	Rear	Side	As per Municipality's parking policy
Not Applicable	5m	3m	3m	
OTHER CONTROL REGULATIONS				
1. Compliance with National and Provincial Environmental Legislation 2. A water use licence / authorisation may be required in terms of the National Water Act, 1998 (Act No. 36 of 1998) for certain land uses. 3. The Municipality may relax the provisions of building lines during the evaluation of the site development plan to the extent that it deems it fit in its opinion that such relaxation shall not harm or be detrimental in to the adjoining properties.				

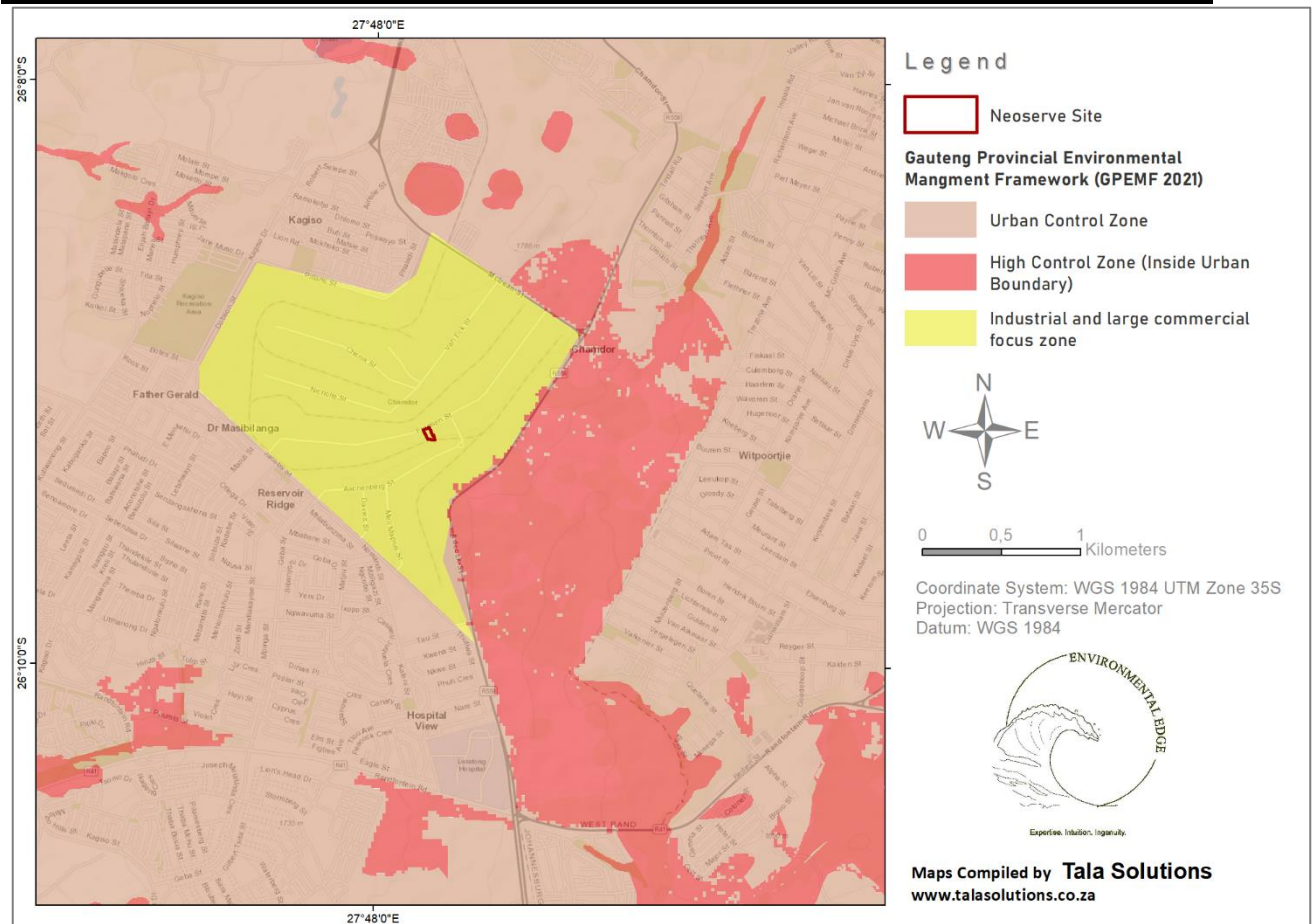


Figure 3-1: Neoserve's Industrial Zoning in terms of the Gauteng Provincial Environmental Management Framework (GPEMF 2021).

3.3. Locality and Landuse

The site is situated within an already built-up industrial area. It is immediately surrounded by industrial establishments located within 500 m radius from the site.

The immediate surrounding area is already characterized by industrial activities undertaken by various companies including South African Brewery Chamdor (Liquor manufacturer), TotalGas Depot, Truco Africa (formerly Transvaal Rubber Company) (rubber manufacturing), Grinding Techniques (Pty) Ltd (grinding products manufacturer), AVIMA (Agricultural, Veterinary, Industrial Manufacturing and Marketing), Oryx Energies (gas manufacturers), Stoney Crescent (Dust Extraction; Tool Making; Metal Pressings; Metal Spinning; Wire Work; Designing Products and General Engineering), Weco (manufacturing of component wear parts), to name a few.

The presence of these companies has completely changed the character of the area in-line with the industrial 2 zoning as described in section 3.2 above. Figure 3-2 below shows the locality of the area and Figure 3-3 shows surrounding area within 500 m radius from Neoserve.

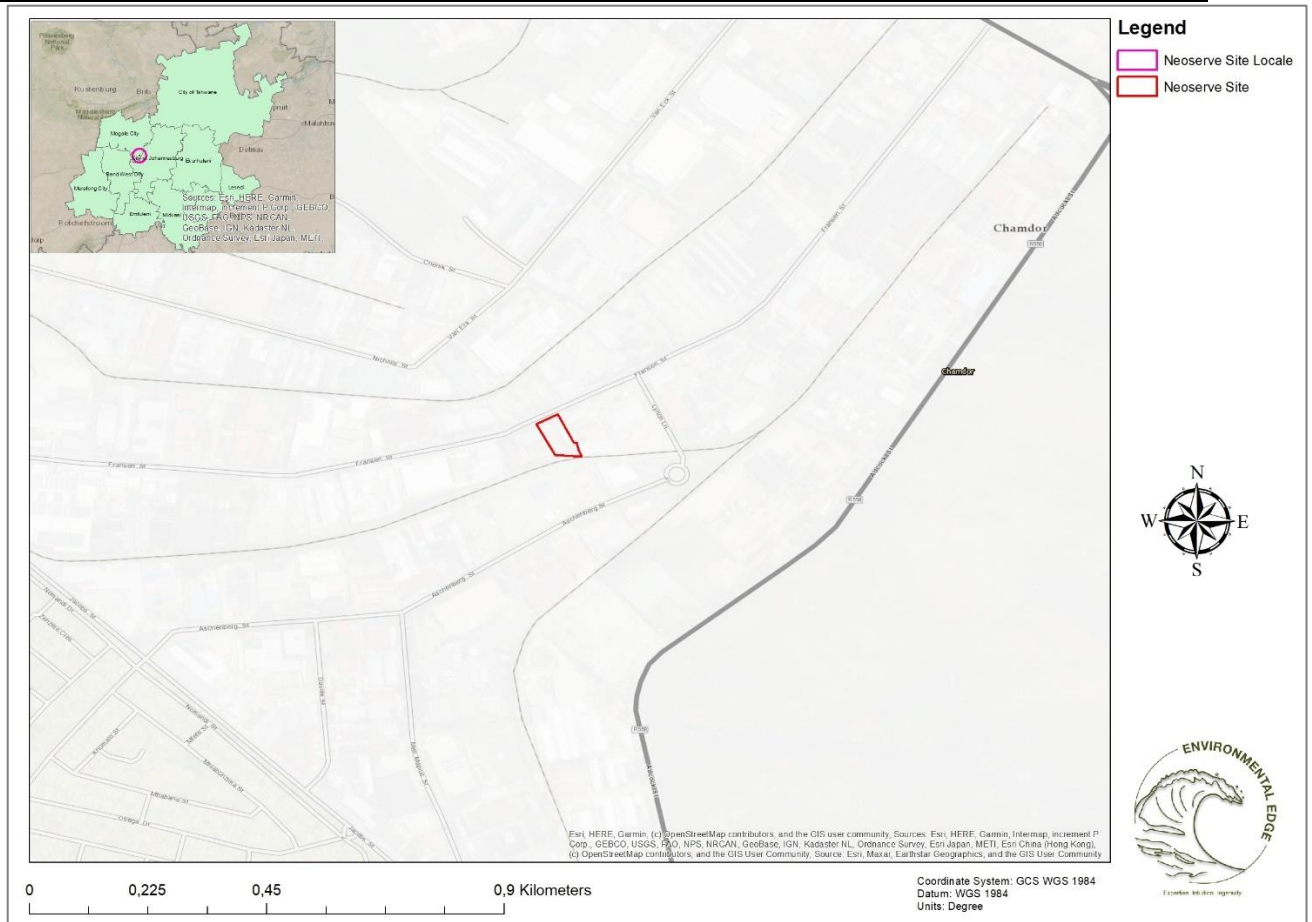


Figure 3-2: Neoserve's Locality Map



Figure 3-3: Neoserve's Surrounding Area (500 m Radius) Map. Shows industrial activities surrounding the site)

The closest residential areas include Kagiso which is located about 780m west of the Neoserve site, and Witpoortjie which is located approximately 1.4km east of the Neoserve Site. The two residential areas consists a number of schools which are within a 5km radius of the proposed facility which includes, Kagso Senior Secondary (1.15km east), Tsholetsega Public School (1.22km northwest), Mofundi/John Martin School (1.25km north), Thembile Primary school (1.63km west), Khaselihle Primary School (1.3km west), Entuthukweni Primary School (1.35km west), Madiba Comprehensive School (1.37km west), Sandile Primary School (1.92km west), Laerskool Culembeeck Primary School, Hoërskool Bastion, Little Stars Pre-Primary School, Laerskool Roodebeeck, Princess Primary School among others.

Neoserve' site is situated at approximately 3.76 km west of the R24 Regional Road which can be accessed through the Chamdor main Road from the site. Table 3-2 and Table 3-5 below shows the cadastre information of the site. Table 3-3 and Table 3-4 show the approximate corner points, and the centre point coordinates of the site, respectively.

Table 3-2: Cadastre Information.

Portion	1
ERF	256
Portion Name	CHAMDOR
Zoning:	Industrial 2

Table 3-3: Approximate corner points of the Neoserve facility.

Corner	Latitude	Longitude
Point/Corner 1	26° 9'13.37"S	27°48'11.64"E
Point/Corner 2	26° 9'13.44"S	27°48'13.27"E
Point/Corner 3	26° 9'13.05"S	27°48'13.09"E
Point/Corner 4	26° 9'12.60"S	27°48'12.98"E
Point/Corner 5	26° 9'12.61"S	27°48'12.81"E
Point/Corner 6	26° 9'10.87"S	27°48'11.81"E
Point/Corner 7	26° 9'11.46"S	27°48'10.50"E

Table 3-4: Centre Point coordinates of the Neoserve facility.

Point	Latitude (S)	Longitude E
Centre Point	26° 9'12.24"S	27°48'11.82"E

Table 3-5: 21 Digit Surveyor General code.

21 Digit SG Code																				
T	0	I	Q	0	0	5	6	0	0	0	0	0	0	1	6	8	0	0	0	0

3.4. Site Description

Current infrastructure at the **Neoserve's** site consists of one main building structure divided into sections currently used for food packaging and storage activities. Current plans are to utilize the north-eastern part of the building for the proposed activities. Existing office spaces and ablutions shall also be used as they are. Please refer to Figure 3-4 below showing the area where operations will take place.

No significant changes to the current main building structures are planned to take. Only the commissioning and installation of equipment such as the burning room, pyrolysis reactor, oil tanks, gas separator, vertical condensers, cooling tower, an extra gas burning room, carbon black discharging system, smoke scrubber system, and some stairs and platform, shall be added. Please see Figure 3-5 for the layout plan. Figure 3-6 shows the layout of the operational equipment which is planned to be installed as per **supplier's manual prescription**.

The following photographs were taken during a site assessment on the 24th of October 2023 and was carried out by the EAPs, Mr Kamogelo Legong and Mr Ramatladi Mokoena from Environmental Edge, accompanied by **Neoserve's** representatives including, Mr. Troy Marais.

The facility is fully paved with good ground impermeability integrity.



Notes

All work to comply with national building regulations and standards and No. 103 of 1977.

Roof Notes

- 184 Chromalock sheeting
- 25 x 75mm joists @ centre to suit 304 15mm Ruffles
- 300 102mm I-beams grade 6
- 300 150mm wall members
- 750mm wall clut:
- Trusses at 750mm centres max or as per engineers note.
- Trusses secured with 6mm girth wire ties
- Roof to be an entrance into backwork
- Roof plan to be indicated with 30mm bolt location
- 5.4mm Ceiling boards to house and roofbrackets
- Solar geyser to be placed in roof over load bearing walls with panels on specified roof
- Roof structure to be designed & installed by specialist

Drainage Notes

- All waste fittings to be 50mm diam
- 1:2 to all drains & junctions of drains, walls have marked corners at ground level
- All waste pipes to be fitted with roof traps & fully accessible along the entire length
- All drains to comply with municipal and State regulations
- No drains or junction under floor slabs
- All drains running under structures to be recessed in concrete

General Notes

- D.P.C. to all walls at floor level and at window sills
- Vertical D.P.C. to any change of floor level
- All D.P.C. to be B.A.D.S. 286
- All glazing to comply with national building regulations
- Windows to be min. 10% floor area
- Natural ventilation to be min. 5% of floor area
- Foundations a ground floor slab to be in Mpa concrete
- Full floor slab to Engineers specification
- Floor finishes as per finishing schedule
- Windows and doors as per schedule

No.	Description	Date

BRUCE WARREN
ARCHITECTURAL DESIGNS

Bruce Warren Architectural Design Studio
083 447 4269
bruce@warrenprojects.com
SACAP Reg No: D17/16

Client:
Dynamic Tyre Solutions

Signed:
Ptn 1 of Erf 256 Chamdor Ext 1

Project:
Factory layout

Site

Project number	Project Number
Date	Issue Date
Drawn by	BRW
Sheet Issue date	08/28/23

P2

Scale: 1 : 200

Figure 3-4: Site Layout Map (Appendix F).

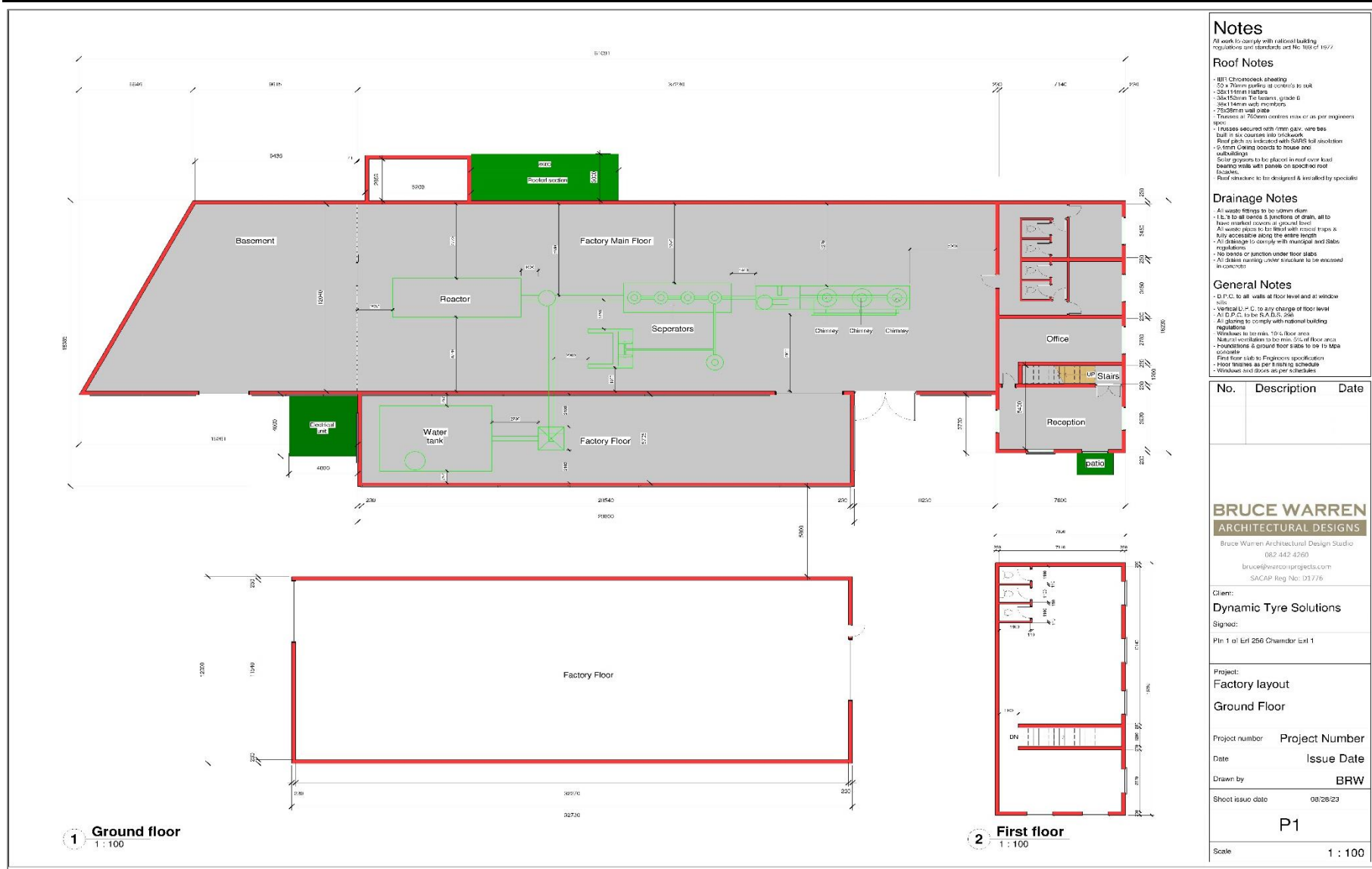


Figure 3-5: Proposed operational area where equipment will be installed and operated (Appendix F).

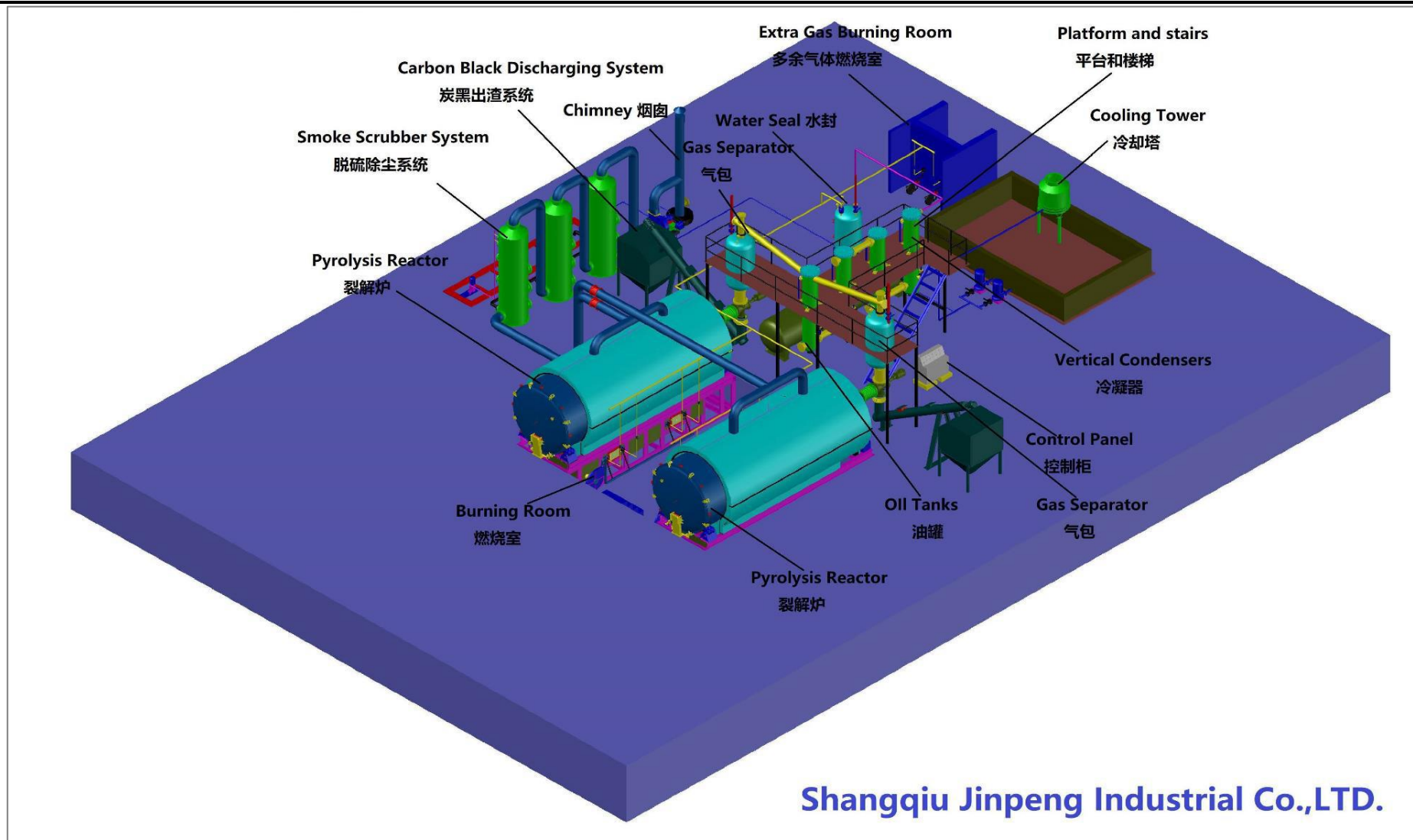


Figure 3-6: Neoserve's pyrolysis equipment layout plan (Appendix F). Source: Supplier of equipment.



PHOTOGRAPH 3-1: Entrance View photo of Neoserve's proposed site. Taken towards the northeast of the site.



PHOTOGRAPH 3-2: South-western view of the facility – taken from northeast of the site.



PHOTOGRAPH 3-3: Site grounds are mostly paved. Photograph taken inside the site, showing south of the site.



PHOTOGRAPH 3-4: Paved grounds – Photograph taken inside the site, showing southwest of the site.



PHOTOGRAPH 3-5: Inside of the proposed building to house operations. Picture showing the factory main floor.



PHOTOGRAPH 3-6: Main factory entrance door. Picture showing the factory main floor.



PHOTOGRAPH 3-7: Photograph showing existing firefighting equipment.



PHOTOGRAPH 3-8: Photograph showing existing electrical distribution box.

3.5. Technical Project Description of Proposed Activities

The proposed pyrolysis plant project entails refining about 30 tons of domestic and industrial waste mainly waste tyres/rubber per day through a pyrolysis process to recover the product of carbon black, scrap steel and pyrolysis oil. The industrial waste that will be sourced is expected to be mainly non-hazardous and on ad hoc basis hazardous.

The overall project will entail the acquisition of waste tyres, rubber and industrial waste material from suppliers. Thereafter the waste material will be temporary stored and then loaded into pyrolysis reactors where it would undergo a pyrolysis process thus the recovery of 1 - carbon black which will be off-loaded and placed in marked bags 2 - scrap steel that will be manually collected and lastly 3 - pyrolysis oil that will be stored in the tanks.

The plant will process 30 tonnes of waste tyres or rubber per day (tpd), producing 16.5 tonnes of pyrolysis oil daily. By-products from the process will be carbon black (10.5 tpd) and scrap steel (3 tpd). The waste tyres and rubber waste will be delivered to the plant by trucks is expected to be two 3.5-ton trucks/day and one 10-ton truck per day. The pyrolysis oil will be collected every second day by oil tankers (20 ton) and oil trucks (6 ton).

The plant will be a XY-8-P batch pyrolysis machine with two reactors. The capacity of the reactors is 10 MT/batch. The heating system will comprise of a burning room operating at a temperature of 1,100°C using 60 kg/hr of oil, but also fuelled by coal, wood or carbon black pellets. There will be 12 gas burners and six oil burners, including a draft fan and blower. The cooling system will comprise of two buffer gas separators, four sets of vertical condensers, two oil tanks with an oil pump, and a cooling water tower with pumps. There will also be gas and smoke purifying systems, with spraying tower and absorption tower. Waste gas will be burnt, and this was assumed to be controlled indoors. Carbon black will be discharged through a bin within the plant building.

Please see the Process Flow Diagram in Figure 3-7 below.

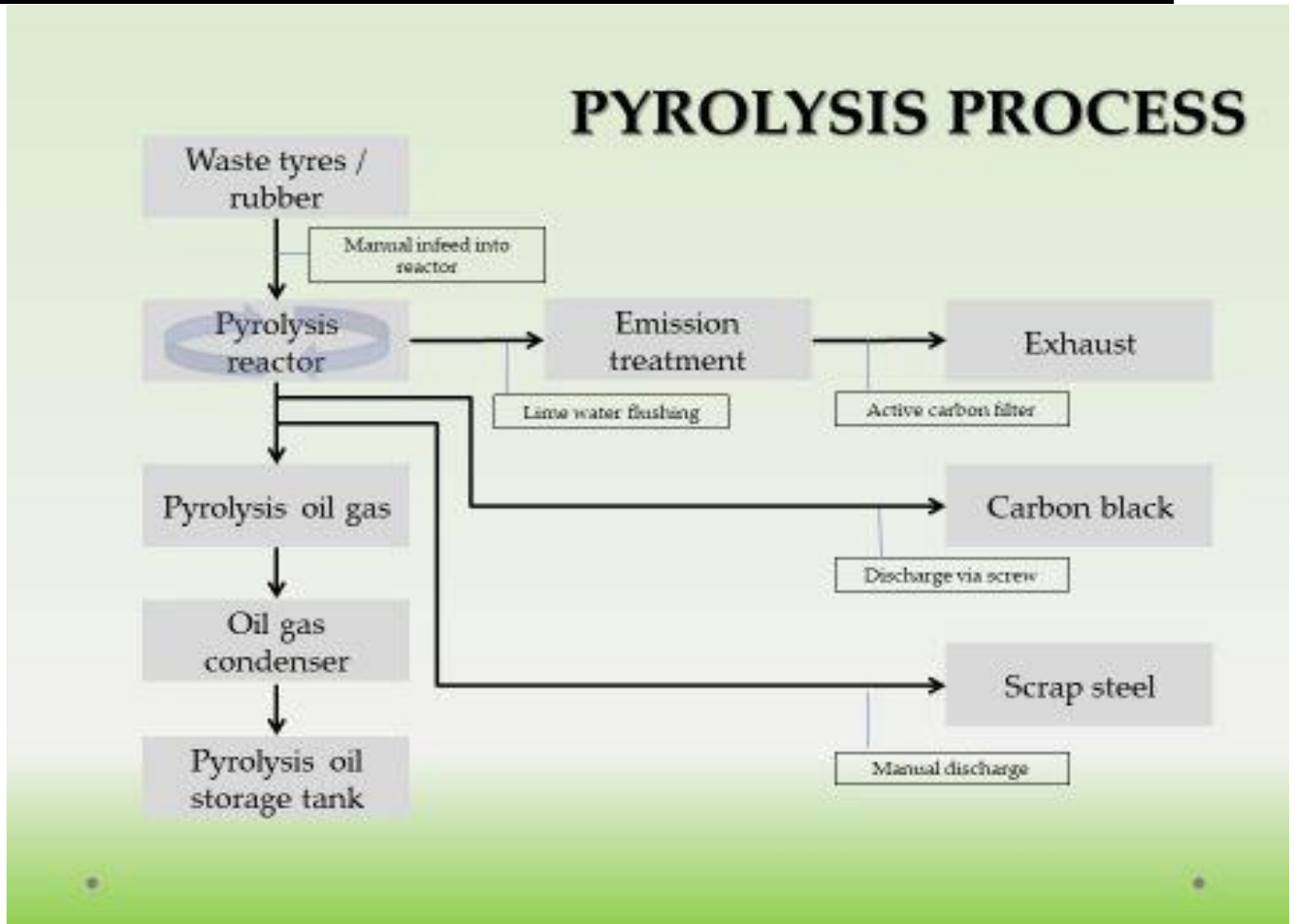


Figure 3-7: Neoserve's Process Flow Diagram

3.6. Triggered Listed Activities

Table 3-6 below outlines the corresponding applicable listed activities triggered by Neoserve in terms of Government Notice R921 of the National Environmental Management Waste Act (No. 59 of 2008, as amended).

Table 3-6. Listed Activities triggered by the activity at Neoserve.

No.	Activities listed in terms of Government Notice R921 of the National Environmental Management Waste Act (No. 59 of 2008, as amended)	Activity details (clear description including extent i.e., GPS coordinates)
1	Category A: Activity 3(5) The recovery of waste including the refining, utilisation, or co-processing of waste in excess of 10 tons but less than 100 tons of general waste per day or in excess of 500kg but less than 1 ton of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises.	The proposed development is set to process waste tyres at capacities in excess of the thresholds. Coordinates: Latitude: 26°11'45.0"S Longitude: 27°58'18.9"E
2	Category A: Activity 3(6) The treatment of general waste using any form of treatment at a facility that has the capacity to process in excess of 10 tons but less than 100 tons.	
3	Category A: Activity 3(7) The treatment of hazardous waste using any form of treatment at a facility that has the capacity to process in excess of 500kg but less than 1 ton per day excluding the treatment of effluent, wastewater or sewage.	

4	<p>Category A: Activity 3(12)</p> <p>The construction of a facility for a waste management activity listed in Category A of this Schedule (not in isolation to associated waste management activity).</p>	
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In addition, Neoserve’s proposed activities trigger sub-category 4.21 (Metal Recovery) and 8.1 (Thermal Treatment of Hazardous and General Waste), of Category 4 and 8, respectively in terms of Section 21 of the NEM:AQA and require an AEL to operate. An AEL Application will be lodged with the West Rand District Municipality once the WML is approved and issued by the GDARD for the proposed development. Table 3-7 below describes the NEM:AQA activity.

Table 3-7: Listed activity triggered by Neoserve in terms of section 21 of NEM:AQA.

Category	Sub-category	Name of Listed Activity	Description	NOTES (REASONS)
8	8.1	Thermal Treatment of Hazardous and General Waste	Facilities where general and hazardous waste are treated by the application of heat. All installations treating 10 kg per day of waste.	Proposed development aims to include the processing of waste tyres. This will require an Atmospheric Emissions License in terms of Section 21 of NEM:AQA.
4	4.21	Metal Recovery	The recovery of metal from any form of scrap material by the application of heat.	Proposed activities will include the recovery of metal wires embedded inside waste tyres.

3.7. Alternatives

As far as Chapter 1 of the 2014 EIA Regulations is concerned, practicable and appropriate alternatives must be considered during the process of environmental impact assessment.

Alternatives are defined as “*different means of meeting the general purpose and requirements of the activity, which may include alternatives to the-*

- a. *property on which or location where the activity is proposed to be undertaken;*
- b. *type of activity to be undertaken;*
- c. *design or layout of the activity;*
- d. *technology to be used in the activity;*
- e. *operational aspects of the activity;*
- f. *and includes the option of not implementing the activity.”*

There are no major feasible or reasonable alternatives in the case of Neoserve, as the site has already been disturbed and constructed which are considered, by Neoserve as best suited for their proposed activities. However, in the sections below, each of these alternatives is discussed in relation to the project.

3.7.1. Site Alternatives

The site already has existing infrastructure which is considered adequate for the proposed activities with its main structures set to be left untouched. No significant changes to the current main building structures are planned to take. Only the commissioning and installation of equipment such as the burning room, pyrolysis reactor, oil tanks, gas separator, vertical condensers, cooling tower, an extra gas burning room, carbon black discharging system, smoke scrubber system, and some stairs and platform, shall be added.

In addition, the site sits within an area zoned as “**Industrial 2**” in terms of the Mogale City Land Use Scheme, 2019, which permits noxious industries in this area, in-line with the proposed activities.

Considering the character and the correct zoning of the area, there are no alternative locations considered for the proposed activities.

As such, no alternative choices for the site were considered.

3.7.2. Activity Alternatives



Neoserve have been searching for a significant amount of time for a more suitable site to undertake their proposed activities and this location has proven to have less impacts. The company has acquired extensive experience and have already found a niche in the tyre pyrolysis industry. With the increasing amount of national challenges associated with dealing with waste tyres since the collapse of the REDISA programme, the proposed activity can be vital in its contribution as a mitigation project.

There are no activity alternatives considered for this project.

3.7.3. *Technology Alternatives*

The proposed technology for the activities is considered recent. It does not have any other impacts except for those associated with air quality. The inclusion of abatement equipment such as the three (3) smoke scrubbers would allow for the capturing and significant cleaning of the emissions before they exit into the atmosphere.

Where necessary and if adequate funds are available to do so, the facility plans to continue maintaining and/or upgrading its equipment throughout its operational existence.

Thus, no technology alternatives have been considered or deemed applicable at the moment.

3.7.4. *Operational Alternatives*

The type of industry that Neoserve wishes to embark on has standard operational activities that are specific to the processing of waste tyres. These are what Neoserve plan to implement for their site without any deviations in order to ensure maximum productivity.

Thus, operational alternatives are not possible and have not been considered.

3.7.5. *No-go Alternative*

It must be noted that the option of not **implementing the activity, or the 'no-go' alternative, would result in the closure of the facility with the proposed activities coming to a halt.**

Should the operational activities at Neoserve cease, the waste tyre processing gains will have both direct and indirect consequences. Moreover, the socio-economic advantages associated with the facility will not be realized should the 'no-go' option be selected.

4. NEED AND DESIRABILITY

Waste tyres are a modern-day hazard that pose a significant challenge to country. Despite recycling efforts and government regulations at the national levels, tires are still being disposed of improperly. Some consumers ignorantly stockpile them in vacant area or knowingly dump them in vacant areas. Whatever the reason, there are long-term consequences of these actions.

It is important to understand the importance of recycling waste tires when they are removed from vehicles. Tyres do not decompose. When tyres pile up at landfills sites, or at any stockpile, they can release chemicals into the atmosphere, ground, and water which can alter the ecosystem. Just sitting in the sun, a waste tyre releases greenhouse gases such as methane into the atmosphere which contributes to the increase in climate change effects. In addition, most vehicle tyres contain a high fossil fuel content. They are highly flammable, and once they start burning, it is not easy to put them out. A small tyre pile that catches on fire can burn for months before running out of fuel.

In South Africa, there are thought to be 60 million historical waste tyres, and an additional 11 million waste tyres are produced each year. These tyres can be found in landfill sites in urban, rural, and industrial locations as well as in landfills, where they occupy valuable space. Only 6% of them are recycled (Human, 2006).

Due to their non-biodegradability and the fact that most landfills will not accept them because they cannot be compacted and require a significant amount of airspace compared to their weight, the lack of environmentally safe disposal options for industrial rubber and tyres poses a serious threat to the environment (Mahlangu, 2009). Due to improper storage and frequent unlawful burning of waste tyres for the purpose of producing heat and



recovering steel for recycling, there is a risk to human health, the environment, and the possibility of soil contamination from the settling residues from these tyres (Mahlangu, 2009).

Neoserve offers a significant solution to such challenges while creating and contributing to a relatively new market which will have a greater impact as a mitigation project.



Assumptions
Limitations

5. ASSUMPTIONS AND LIMITATIONS

- It is assumed that all information provided by the Applicant to Environmental Edge was correct and valid at the time it was provided.
- It is not always possible to involve all Interested and/or Affected Parties (I&APs) individually, however, every effort has been made to involve as many I&APs as possible. It is also assumed that individuals representing various associations or parties convey the necessary information to relevant associations, parties or organs of state.
- It is assumed that the information provided by the various specialists is unbiased and accurate. Please refer to their Declaration of Interests (DoI) included in the first pages within their respective reports. The AQIA DoI is included in Appendix C.
- It is assumed that the motivation and ensuing planning and studies for the project were done with integrity and that all information provided to the specialist by the Applicant and its consultants to date, is accurate.
- It is assumed that the project description and infrastructure components as discussed above are reasonably accurate. These details were used to assess the potential impacts.

With regard to comments, concerns or objections that are received during the public participation process, the following assumptions are made:

- Questions asked were answered accurately.
- The attitudes of the respondents towards the project will remain reasonably stable.

Socio-Economic:

- The secondary data sources used to compile the socio-economic baseline (demographics, dynamics of the economy) although not exhaustive, can be viewed as being indicative of broader trends within the study area.
- The study was done with the information available to the EAP within the time frames and budget.
- Possible impacts and stakeholder responses to these impacts cannot be predicted with complete accuracy, even when circumstances are similar. Any predictions are based on research and years of experience, taking the specific set of circumstances related to this project into account.



6. DESCRIPTION AND SENSITIVITY OF THE RECEIVING ENVIRONMENT

The sections below provide an understanding of the environmental context and sensitivity within which the activities are located. This assists in understanding the potential impacts associated with the project. The sections below provide a description of the attributes and key sensitive receptors with regards to the receiving environment of the study area or area of interest. Where applicable, a description of the receiving environment in relation to specialist assessment which was undertaken as part of this impact assessment process is provided.

6.1. Topography

Neoserve sits within an area that is generally flat, ranging at approximately 1673 m (south-west of site) to 1699 m (south of site) above sea-level. The facility grounds slope towards south-west.

6.2. Geology and Soil

Neoserve development site sits on the Government Subgroup. The Subgroup is divided into three formations: The Coronation with its tillite and magnetic marker horizons, the Promise Quartzite and the Witpoortjie Formations. The Promise Reef and Blue Grit are both diamictite markers delineating the base and the top of the Subgroup respectively. Thick coarse grained tabular crossbeds and "water escape" structures are also common in this Subgroup.

The Witpoortjie Formation is about 680 m thick in the study area. Directly above the shales containing the Coronation Shale Formation 6 sandstones alternate with shale units. The top of the formation is marked by a marker, the Blue Grit diamictite, the other marker being the Government Reef at the base of a fourth sandstone unit. As in the Delmas area the shales below the Government Reef are all dark grey to black in colour and often grade into siltstones which in turn grade into sandstones. Please refer to Figure 6-1 below for a map showing the geology of the area.

With reference to the soil characteristics shown in Figure 6-2 below; the development area is also characterized by red and yellow, massively weakly structured soils with a low to medium base status.

However, this unit of soil at the site carries the common characteristics of the formation itself which includes a series of alternating layers of sandstones, grey black siltstone and carbonaceous mudstone, and very fine-to medium-grained.

The site grounds are already paved with no bare soils. No reconstruction of the site will take place. Therefore, no impacts are foreseeable for this aspect.



Figure 6-1: Geology of the area around Neoserve.



Figure 6-2: Soil character of the around Neoserve.

6.3. Climate

The dispersion and dilution potential of contaminants released into the atmosphere is dependent on meteorological processes. The stability of the atmosphere and the depth of the surface mixing layer control the vertical dispersion of pollutants. Dominant wind fields affect horizontal emission dispersion. Furthermore, meteorological parameters including temperature, precipitation, wind speed, and wind direction are of significance when looking at pollution dispersion as they will influence the degree to which pollution will accumulate or disperse in the atmosphere.

6.3.1. Surface Wind Field

The wind field determines both the distance of downward transport and the rate of dilution of pollutants. The generation of mechanical turbulence is a function of the wind speed, in combination with the surface roughness. The wind field for the study area is described with the use of wind roses.

Wind roses comprise 16 spokes, which represent the directions from which winds blew during a specific period. The colours used in the wind roses below, reflect the different categories of wind speeds; the yellow area, for example, representing winds in between 2 and 4 m/s. The dotted circles provide information regarding the frequency of occurrence of wind speed and direction categories. The frequency with which calms occurred, i.e. periods during which the wind speed was below 1 m/s are also indicated.

The data described below is MM5 modelled meteorological data, obtained from Lakes Environmental for the period January 2019 to December 2021. MM5 is a PSU/NCAR meso-scale model used to predict meso-scale and regional-scale atmospheric circulation. The model provides integrated model meteorological data, which can be used in a wide range of applications. This model is often used to create weather forecasts and climate projections. Details of the meteorological data used are summarised in Table 6-1 below.

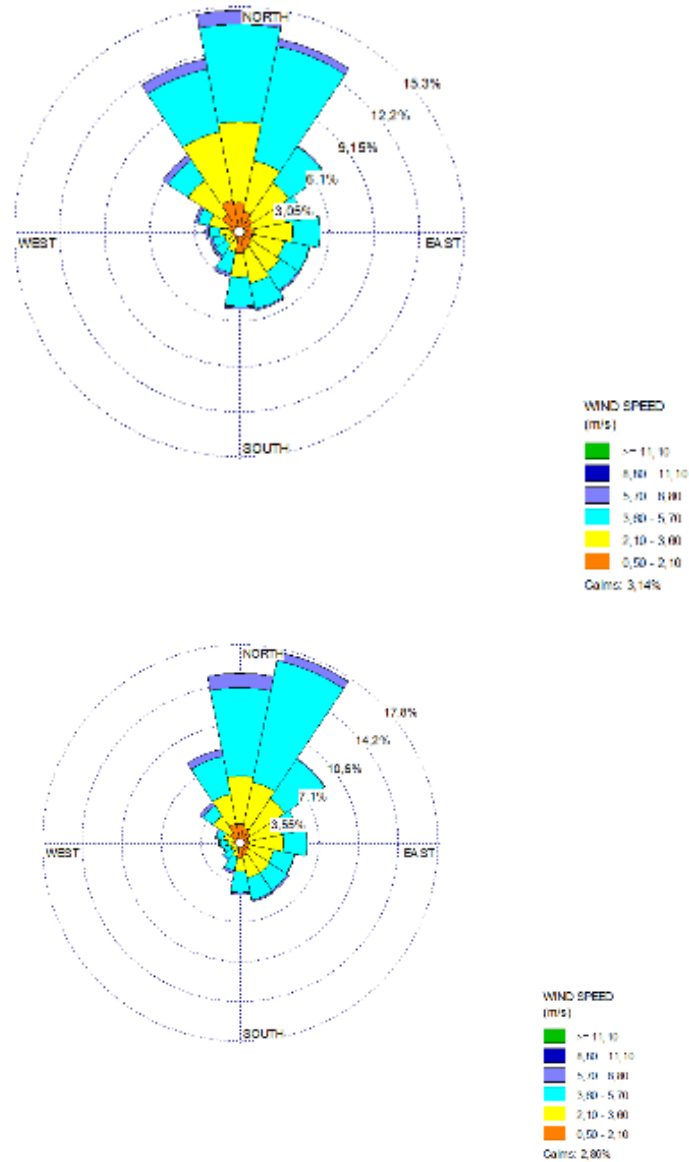
Table 6-1: Meteorological data details.

Meteorological Data Details



Met Data Information	
Met data type	Description
Datum	MM5 AERMET-Ready (Surface & Upper Air Data)
Closest Town	WGS 84
Time zone	Johannesburg - South Africa
Period of record	UTC +2 hours
Met Station Parameters	Description
Anemometer height	January 2019 - December 2021
Station base elevation	13 m
Upper air adjustment	1 614 m
Grid Cell Information	-2 hours
Co-ordinates of centre met grid	26.195477°S, 27.972098°E
UTM zone	-35
Cell dimension	12 km x 12 km
Surface Met Data	Description
File format	SAMSON file
Output interval	Hourly
Upper Air Data	Description
Format	TD-6201- Fixed Length
Reported in	GMT
Output interval	00Z and 12Z
Models used to process met data	
Model used to process data for wind roses	WR Plot
Model used to process data for AERMOD	AERMET

Wind roses for the period January 2019 to December 2021 are shown in Figure 6-3. The wind field for the 3-year period (i.e., average wind field) and diurnal period (morning and night-time) is uniform, with frequent northerly, north-north-easterly and north-north-westerly winds. Calm conditions prevailed 3.14% during the recording period with a period average wind speed of 3.10 m/s. During the daytime, the average wind speed is 3.21% and calm conditions prevailed 4.12%. For the evening period, a lower average wind speed of 2.96 m/s was recorded, with calm conditions prevailing for 4.24% of the time.



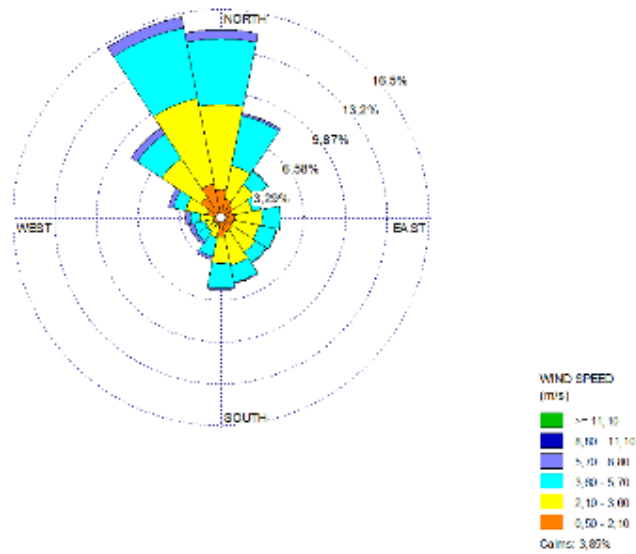


Figure 6-3: Period average wind roses (average, daytime and night-time).

6.3.2. Temperature

Air temperature is important, both for determining the effect of plume buoyancy (the larger the temperature difference between the plume and the ambient air, the higher a pollution plume can rise), and determining the development of the mixing and inversion layers. Minimum, maximum and mean temperatures as recorded at the proposed plant, are shown in Table 6-2. Period average maximum and minimum temperatures were 20.9 °C, and 8.3 °C respectively

Table 6-2: Minimum, maximum and average temperatures for (2019 – 2021).

°C	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Min	10.0	10.0	8.6	6.6	0.1	-0.9	-2.6	-1.2	2.0	4.6	10.1	10.6
Max	31.0	29.2	29.4	27.0	22.8	19.2	19.4	21.9	25.9	29.5	31.1	30.6
Ave	21.6	20.8	19.5	16.0	12.5	8.8	8.3	11.8	15.1	18.2	20.9	20.7

6.3.3. Rainfall

Rainfall has an overall dilution effect and cleanses the air by washing out particles and pollutants suspended in the atmosphere. Monthly total rainfall at the proposed plant for the period January 2019 to December 2021 is presented in Figure 6-4 below. The area receives, on average 74.3 mm of rainfall per year. Rainfall is mostly received from September to April.

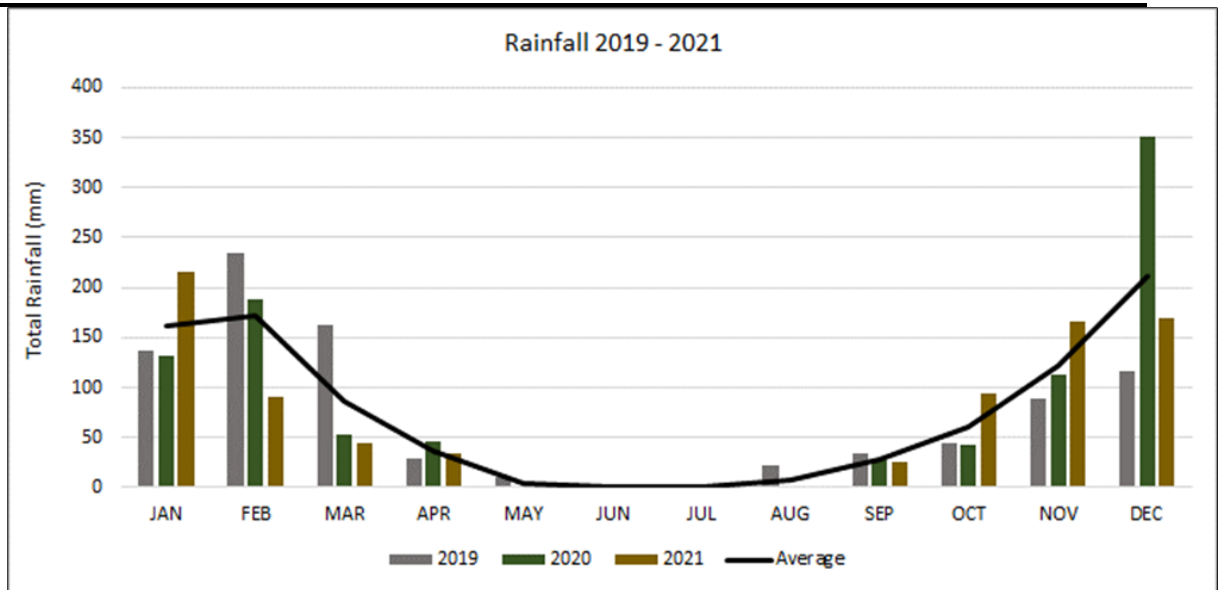


Figure 6-4: Total monthly rainfall for the Neoserve site for 2019 - 2021.

6.3.4. Atmospheric Stability

Two parameters describe the atmospheric boundary layer properties: the boundary layer depth and the Monin-Obukhov length. The Monin-Obukhov length (L_{Mo}) provides a measure of the importance of buoyancy generated by the heating of the ground and mechanical mixing generated by the frictional effect of the earth's surface. Physically, it can be thought of as representing the depth of the boundary layer within which mechanical mixing is the dominant form of turbulence generation (AIRSHED, 2017; CERC, 2004). The atmospheric boundary layer constitutes the first few hundred metres of the atmosphere. During daytime, the atmospheric boundary layer is characterised by thermal turbulence due to the heating of the earth's surface. Night-times are characterised by weak vertical mixing and the predominance of a stable layer. These conditions are normally associated with low wind speeds and lower dilution potential (AIRSHED, 2017).

The highest concentrations for ground level, or near-ground level releases from non-wind dependent sources would be expected during weak wind speeds and stable (night-time) atmospheric conditions. For elevated releases, unstable conditions will likely result in very high concentrations of poorly diluted emissions close to the stack. This is called looping and occurs mostly during daytime hours. Neutral conditions disperse the plume equally in both the vertical and horizontal planes and the plume shape is referred to as coning. Stable conditions prevent the plume from mixing vertically, although it can still spread horizontally and is called fanning (Tiway & Colls, 2010; AIRSEHD, 2017). For ground level releases the highest ground level concentrations will likely occur during stable night-time conditions (AIRSHED, 2017).

An Air Quality Impact Assessment was conducted to determine Neoserve's climatological and atmospheric impacts within its surroundings. Please refer to section 8.3.1 and section 10.1 below for a summative outlook on the impacts and the proposed mitigation methods, respectively.

6.4. Baseline Air Quality Assessment

The air quality status quo at any project site is usually determined using available monitoring data available from permanent ambient air quality monitoring stations and dustfall networks operated near the project site, which is accessible via the South African Air Quality Information System (SAAQIS) website. The nearest Air Quality Monitoring Station (AQMS) to the proposed plant is the Davidsonville AQMS, which is located ~4.6km east of the proposed plant.

However, this AQMS seems to be non-operational as there was no ambient air quality data recorded for any of the criteria air pollutants for the past several years. In addition, there are no known dustfall networks in the area. Thus, the air quality status quo at the project site could not be determined in this AQIA.

Despite the limitation mentioned above, it is noted that the proposed pyrolysis plant, as planned, is not expected to be a major source of incremental particulate, metal or gaseous emissions at the project site due to the inclusion of a smoke/ water scrubber in its design.

Please refer to the air quality impact assessment report for more information on the air quality status of the area.

6.5. Biodiversity and Vegetation

In accordance with the Gauteng C-Plan 3.3 of the South African National Biodiversity Institute (SANBI), Neoserve is situated outside any conservation areas. The closest critical biodiversity area is located at approximately 384 m southeast of site.

Please refer to Figure 6-5 below for the Biodiversity Map of the surrounding area.



Figure 6-5: Map illustrating important Biodiversity areas around Neoserve.

According to SANBI, the site is dominated by the Soweto Highveld Grassland. The Grassland is normally covered with indigenous *Leonotis leonurus* and *Asparagus larcinus*. These native species usually thrive in overgrazed and transformed areas and is usually not associated with any red listed floral species.

However, the site is located within an industrial area with all grounds already paved and has no bare soils or vegetation. Therefore, no impacts are foreseeable for this aspect

See also Figure 6-6 below for a vegetation map of the site and its surroundings.

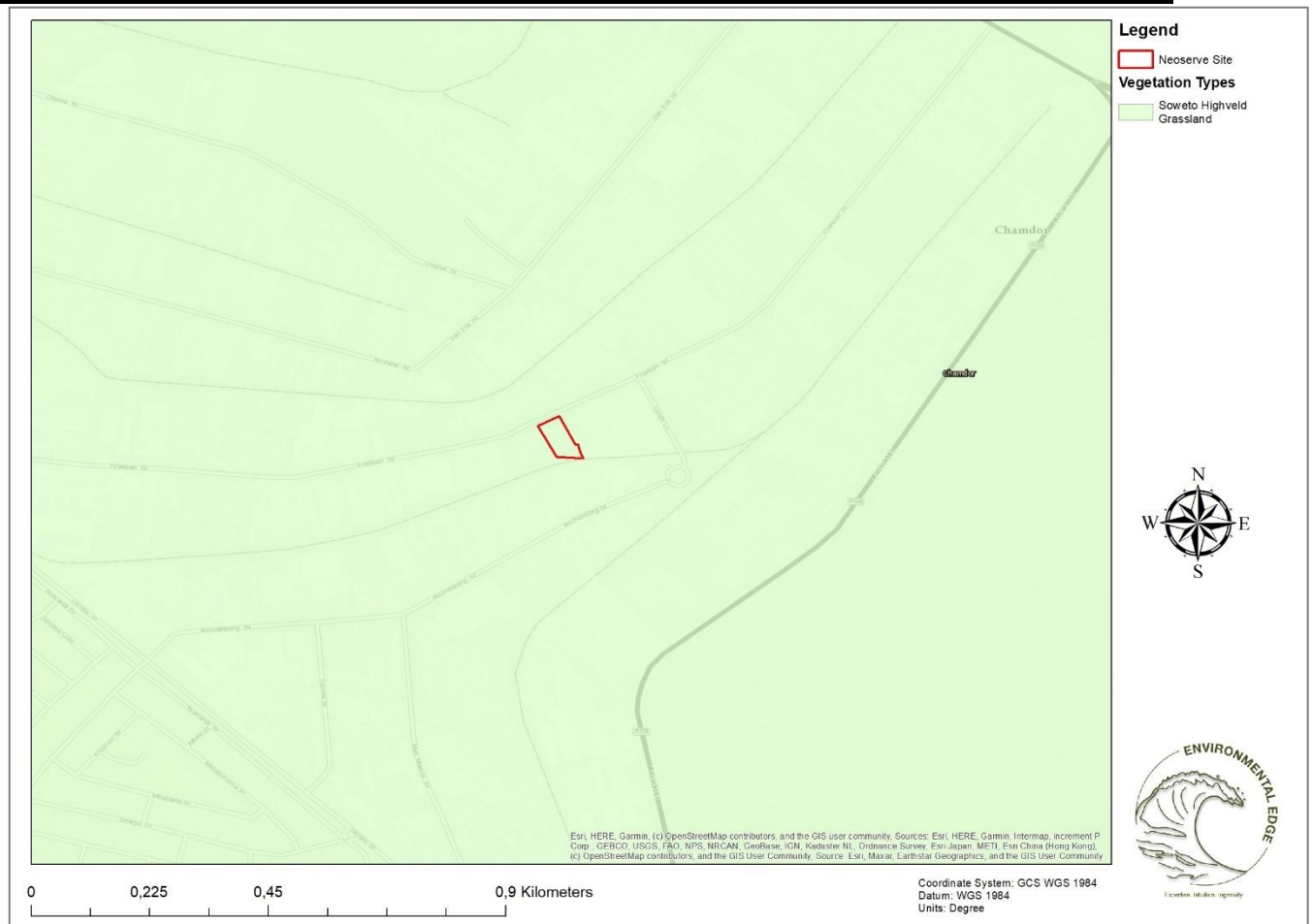


Figure 6-6: Map illustrating Vegetation Type around Neoserve.

6.6. Surface Water and Wetlands

Data from the Council for Scientific and Industrial Research, the 2018 Artificial Wetlands, the 2018 National Wetland Map 5 and Confidence Map and the 2018 River Ecosystem threat status and protection level which is available on the SANBI GIS website, show that the closest surface water or wetland to the site is about 755.58 m northeast of the site, outside the industrial area. See Figure 6-7 below illustrating the surface water bodies surrounding Neoserve.

Since the site sits at a regulatory acceptable distance from any natural surface water bodies, no further assessment is required on this aspect. However, significant mitigations to ensure further management of this aspect are recommended in the attached EMPr.



Figure 6-7: Map illustrating the surface water bodies surrounding Neoserve.

6.7. Heritage

There are no sites or places of heritage significance within 6 km of Neoserve. The closest ones are the Old NZASM Station located at about 6 km northwest, the Old Municipal Chambers at 6.19 km west, the Old Pumphouse at 6.30 km west, the Dadoo Block at 6.37 km northwest, and the Roodepoort Town School at 6.61 km west of the site.

See Figure 6-8 below for an illustration of the heritage sites in relation to Neoserve.

The site is located in an already built-up area. There will be no modification of any existing infrastructure. Only the installation of required operational equipment will be undertaken. Therefore, no further assessment is required in this aspect.

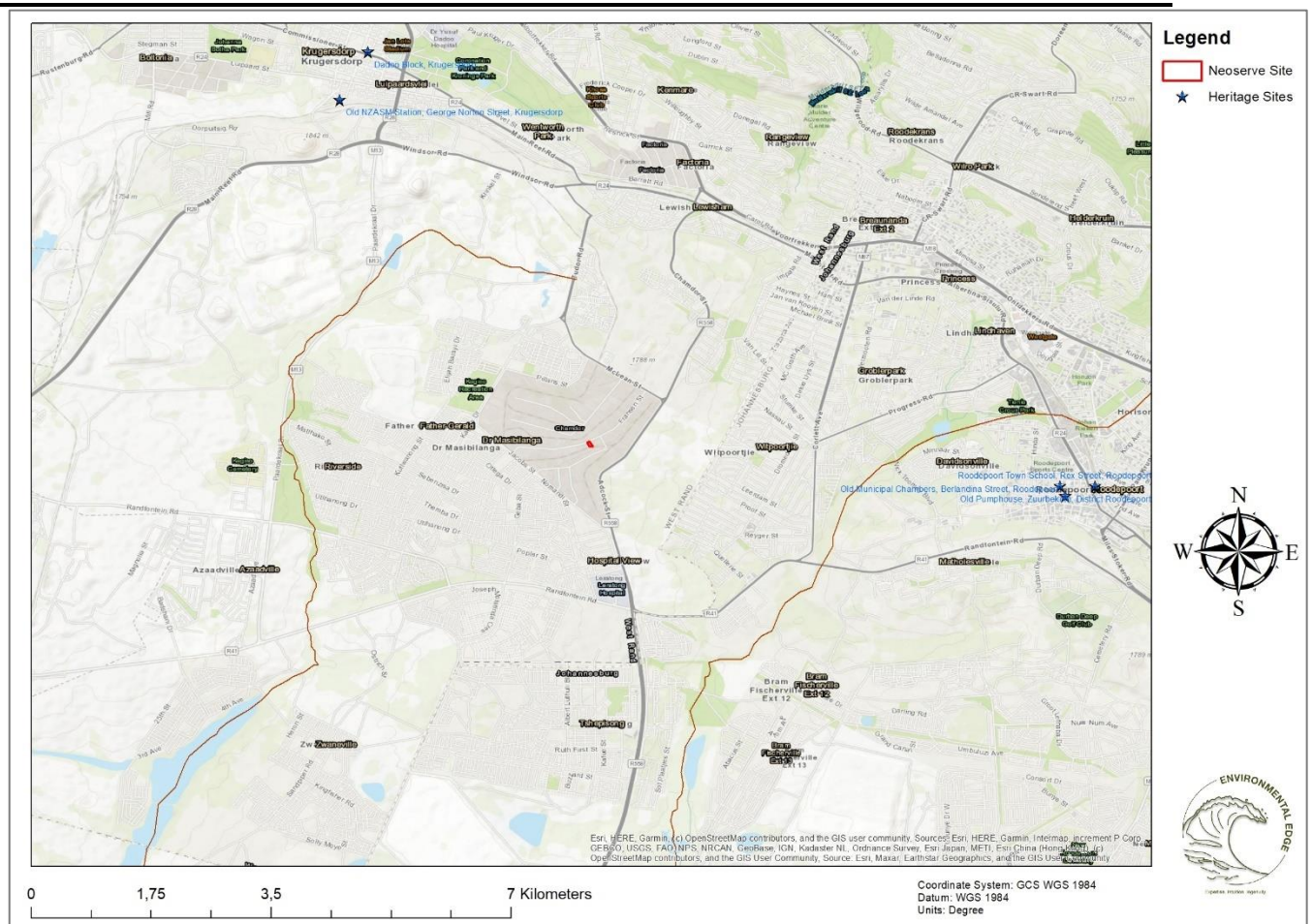


Figure 6-8: Heritage sites in relation to Neoserve.

6.8. Traffic

The industrial area is characterized by relatively high peak time (early mornings and late afternoons) volumes of traffic with occasional influx of heavy vehicles for delivery or collection purposes throughout the day. The site can be accessed from the N1, R12 (west), Chamdor Road, Mclean Street, the Fransen Street, or from the N12, R558 (north), Jacobs Street, the Fransen Street.

Noting that the site is located within an already industrialized area, the traffic resulting from the operations of the site can be regarded as conforming with that of the surrounding area.

Therefore, no further assessment is deemed significant for this application. However, significant mitigations to ensure further management of this aspect are recommended in the attached EMPr.

6.9. Visual Aspects

The site is located within an existing built-up area that is characterized by industrial and commercial buildings, walling/fencing, roads and, to somewhat degree, un-natural lighting. The activity is considered to be in line with the “sense of place” of the area.

Furthermore, all production activities are to take place within the planned buildings which will block normal human-view of the facility from outside.

Due to the nature of the surrounding environment, the existence of Neoserve has no significant changes to the visual environment as it blends with the visual aspect of the area, thus no further assessment is required.

However, significant mitigations to ensure further management of this aspect are recommended in the attached EMPr.

6.10. Noise

Existing noise is mainly from the various industrial and commercial activities taking place around the area. This includes trucks and machinery from companies dealing with manufacturing, including equipment supply, trucks, equipment and vehicles, etc.

Other significant noise contributors include motor vehicle traffic from the nearby regional roads such as the R41 (~2.15 km south), R24 (~3.72 km north), and the R28 (~6.38 km west). Noise levels generated by Neoserve from their proposed relatively enclosed activities are generally in line with the ambient noise currently experienced as a result of the surrounding land use activities.

However, in order to accurately determine the noise levels from the proposed activities and their impacts, the facility needs to first commence their operations. Therefore, it is recommended that noise impact assessment may be conducted after the operations have commenced so to get accurate results.

As such, no noise assessment is required at this stage. However, significant mitigations to ensure further management of this aspect are recommended in the attached EMPr.

6.11. Socio-Economic Setting

The West Rand District Municipality is located in the western part of the Gauteng Province, South Africa. It is surrounded by the Bojanala District Municipality to the north, the City of Tshwane Metropolitan Municipality to the north-east, the City of Johannesburg to the east and the Sedibeng District municipality to the north-east. The West Rand District consists of three local municipalities: Mogale City, Merafong City and Rand West City.

The economy of West Rand is primarily driven by its mining sector, especially gold mining. In 2018, West Rand contributed about 3.8% to the economic output of Gauteng Province. However, it is worth noting that in 2018, West Rand's economy was expected to have been in recession with growth decreasing by 1.4% from 1% in 2017 due to a decline in mining output which decrease by around 8.6%. Output in manufacturing and construction also contracted. The total number of unemployed people within West Rand constitutes 9.55% of the total number of unemployed people in Gauteng Province.

Mogale City Local Municipality is regarded as the current economic driver of the district, dominating the activity at 24.4%, with towns such as Krugersdorp which has considerable manufacturing capacity. However, the slow pace of economic growth in Mogale City has been a concern which could be attributed to decreases in the manufacturing and construction sectors which, together, accounted for 23.7% of economic activity in 2018.

The **district's Development** Priority 7 (decent work and economic growth) and Priority 8 (industry, innovation, and infrastructure) of the 2023/24 Integrate Development Plan (IDP) of the district includes:

- Development programmes that support innovation. Support any innovative ideas,
 - Tyre pyrolysis and waste incineration are widely considered as innovative ideas to assist with the recycling of tyres (which is a relatively recent technology) and the minimization of waste and their toxicity which could alternatively be more detrimental to the environment.
- Job Creation, local investment,
 - The company plans to upskill and directly employ about 12 new individuals from the local areas.
- 60% of redundant properties in local industrial sites to be occupied by private sector:
 - The facility which Neoserve plans to occupy is empty and may currently be regarded as redundant. The company proposes to utilize this facility and contribute to this Development Priority.

Neoserve's contribution is further assessed in section 8.3.2 in this report.

7. SCREENING TOOL REPORT

A Screening Tool Report was produced using the DFFE’s online environmental screening tool. A copy of the full report is included in Appendix L. The following summary of the development site environmental sensitivities were identified by the tool.

Table 7-1: Summary of the development site environmental sensitivities identified by the Screening Tool.

Theme	Very High Sensitivity	High Sensitivity	Medium Sensitivity	Low Sensitivity
Agriculture Theme			X	
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme			X	
Defence Theme				X
Paleontology Theme				X
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. However, and as per the Screening Tool Report, it is important to note that the footprint environmental sensitivities for the proposed development footprint as identified by the tool, are indicative only and must be verified on site by a suitably qualified person before specialist assessments identified can be confirmed.

It is the responsibility of the EAP to confirm these lists and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

As such, the following Table 7-2 below lists the specialist assessments identified by the screening as well as reasons for their inclusion or exclusion. Photographic evidence of the site is also provided in section 3.4 of this impact assessment report. In addition, section 6 above, explains the current status of the environment within which the proposed site is located.

Table 7-2: List of specialist assessment recommended by the Screening Tool – with reasons for inclusion or exclusion.

Specialist Assessment	Included or Excluded	Reason
Agricultural Impact Assessment	Excluded	Site grounds are already paved with no bare soils (as seen in the site Photographs in section 3.4 above). No reconstruction of the site will take place. Therefore, the soil and or agricultural impacts is regarded to have been extensively impacted by the development. The proposed activity only includes the commissioning of operational equipment with no changes to the existing infrastructure. Therefore, no impacts are foreseeable for this aspect.
Archaeological and Cultural Heritage Impact Assessment	Excluded	Site grounds are already paved with no bare soils (as seen in the site Photographs in section 3.4 above). There will be no modification of any existing infrastructure. Only the installation of required operational equipment will be undertaken. Therefore, heritage impact is possible for the proposed activities at this site.
Palaeontology Impact Assessment	Excluded	Site grounds are already paved with no bare soils (as seen in the site Photographs in section 3.4 above). There will be no modification of any existing infrastructure. Only the installation of required operational equipment will be undertaken. Therefore, impacts on palaeontology is possible for the proposed activities at this site.
Terrestrial Biodiversity Impact Assessment	Excluded	Site grounds are already paved with no bare soils (as seen in the site Photographs in section 3.4 above). The site is located within an existing industrial area with no terrestrial biodiversity. Therefore, no impacts are foreseeable for this aspect.
Aquatic Biodiversity Impact Assessment	Excluded	There are no water bodies on site nor within 500m from the site. The site is located within an industrial area. Therefore, no impacts are foreseeable for this aspect.



Hydrology Assessment	Excluded	There are no water bodies on site nor within 500m from the site. The site is located within an industrial area. There will be no modification of any existing external structures. Only the installation of required operational equipment will be undertaken. Therefore, no impacts are foreseeable for this aspect
Noise Impact Assessment	Excluded	In order to accurately determine the noise levels from the proposed activities and their impacts, the facility needs to commence their operations. Therefore, it is recommended that this assessment be only conducted after the operations have commenced so to get accurate results.
Traffic Impact Assessment	Excluded	The area is correctly zoned and suitable for industrial activities. The existence of the facility, with additional traffic from dispatch and delivery trucks (occasionally), and a few cars from some of the employees, is not expected to have any significant additional impact to the existing traffic within the area. The proposed activity aligns with the existing traffic impact of the area. Therefore, no further assessment has been considered for this aspect.
Health Impact Assessment	Excluded	In order to accurately determine the impacts related to health in terms of the Occupational Health and Safety Act, 85 of 1993 (OHS Act), it is recommended that all assessments related to health and safety be conducted after the commencement of operations by completing a Health Risk Assessment as well as an Occupational Hygiene Survey, every two (2) years, in compliance with the requirements of the OHS Act. However, the Human Health Impact in section 4.3 of the AQIA, assess the impacts of the pollutants related to the proposed activities, including Particulate Matter, Hydrogen Fluoride, Ammonia, Volatile Organic Compounds, Sulphur Dioxide, Nitrogen Dioxide Carbon Monoxide.
Socio-Economic Assessment	Included	A basic assessment of the proposed project's socio-economic impacts has been included in section 8.3.2 of this report.
Ambient Air Quality Impact Assessment	Included	This is assessed as part of the Air Quality Impact Assessment. The specialist report is included in Appendix G of this report.
Air Quality Impact Assessment	Included	An Air Quality Impact Assessment is completed. The report is included in Appendix G of this report.
Plant Species Assessment	Excluded	Site grounds are already paved with no bare soils or vegetation. The site is located within an industrial area. Therefore, no impacts are foreseeable for this aspect.
Animal Species Assessment	Excluded	Site grounds are already paved with no bare soils, nor animals. The site is located within an industrial area. Therefore, no impacts are foreseeable for this aspect.



8. ASSESSMENT OF IDENTIFIED POTENTIAL IMPACTS

The activity is likely to result in a variety of positive and negative impacts. Additionally, it could potentially result in collective and long-term impacts known as cumulative impacts. A cumulative impact is the impact of an activity that, in itself, may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

This section aims to assess the potentially significant impacts (either negative/positive and/or cumulative) which may/do occur as a result of the activity. Furthermore, it describes the methodology to be utilised in the qualitative assessment of the identified impacts.

The impacts found, including those identified and analysed by specialist assessment, namely the Air Quality Impact Assessment (AQIA) has been reviewed and (where applicable) included in this impact assessment. Where negative impacts were found, mitigation steps have been considered and recommended to minimize impacts. The qualitative and quantitative evaluations of the impacts provide an indicator of the mitigation measures' potential effectiveness in reducing the overall importance of the effect.

Each impact has been assessed through the Planning, Construction, Operation and Decommissioning phases of the proposed development, where relevant. Where required, the proposed mitigation measure have been detailed.

8.1. Environmental Issues and Impacts

The activity is associated with a variety of positive and negative impacts. Additionally, a few collective and long-term impacts, known as cumulative impacts, result from the activity. A cumulative impact is the impact of an activity that may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

As the site infrastructure is already built up with the proposed activities including only the commissioning and installation of equipment related to the activities, the construction/ commissioning, and operational phases are included in this assessment. Decommissioning phase is somewhat included in this assessment as the site infrastructure is perceived as permanent with the operations planned to take place indefinitely to a point where it may be sold to a potential buyer(s).

8.2. Impact Assessment Methodology

8.2.1. Determination of Significance of Impacts

Significance is calculated by a synthesis of effect characteristics that include an impact's meaning and severity. Context refers to the regional scale, i.e., location, local, national or global, while intensity is characterized by the severity of the effect, e.g., the degree of variance from background conditions, the size of the affected area, the length of the impact and the overall likelihood.

Significance is an indicator of the importance of the effect, both in terms of physical scale and time scale, and thus demonstrates the degree of mitigation required. For each impact, the total number of points scored shows the extent of the impact's importance. Significance is calculated as shown in Table 8-2 below.

8.2.2. Impact Rating System

Impact assessment must take into account the nature, scale and length of environmental impacts, whether they are positive (beneficial) or negative (negative) or not (detrimental). Where applicable, each impact is also assessed according to the project stages:

- Construction
- Operation
- Decommissioning

The proposal for mitigation or optimization of an effect is specific, where appropriate. It also includes a brief discussion of the effect and the reasoning behind the evaluation of its importance.

8.2.3. Rating System Used to Classify Impacts

The following rating system is applicable to the possible effects on the receiving environment and contains an objective impact mitigation assessment. Impacts were combined into one ranking. In assessing the significance of each issue, the following criteria including an allocated point system are used:

Table 8-1: Description of parameters used to determine impact significance

NATURE		
A brief overview of the effects of the environmental parameters being evaluated in the context of the project is included. These criteria require a short-written statement of the environmental factor that a specific action or behaviour affects.		
GEOGRAPHICAL EXTENT		
This is described as the region over which the effect is transmitted. The magnitude and significance of an effect usually have distinct scales and grouping ranges are often needed. This is also useful in the thorough evaluation of a project in order to better define it.		
1	Site	The impact only affects the site.
2	Local/district	Have affect on the local area or district.
3	Province/region	Have affect on the entire province or region.
4	International and National	Have affect on the entire country.
PROBABILITY		
This describes the chance of occurrence of an impact.		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).



2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact is likely occurring (Between a 50% to 75% chance of occurrence).
4	Definite	Impact certainly occurs (Greater than a 75% chance of occurrence).

REVERSIBILITY

This describes the degree to which an impact on an environmental parameter can be successfully reversed upon completion of the proposed activity.

1	Completely reversible	The impact is reversible with implementation of minor mitigation measures.
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible, and no mitigation measures exist.

IRREPLACEABLE LOSS OF RESOURCES

This describes the degree to which resources are irreplaceably lost because of a proposed activity.

1	No loss of resource.	The impact does not result in the loss of any resources.
2	Marginal loss of resource	The impact results in marginal loss of resources.
3	Significant loss of resources	The impact results in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.

DURATION

This describes the duration of the impacts on the environmental parameter. Duration indicates the lifetime of the impact because of the proposed activity.

1	Short term	The impact and its effects will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase (0 – 1 years), or the impact and its effects will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development but will be mitigated by direct human action or by natural processes thereafter (10 – 50 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered transient (Indefinite).

CUMULATIVE EFFECT

This describes the cumulative effect of the impacts on the environmental parameter. A cumulative effect/impact is an effect which may not be significant but may become significant if added to other existing or potential impacts emanating from other similar or diverse activities as a result of the project activity in question.

1	Negligible Cumulative Impact	The impact would result in negligible to no cumulative effects.
2	Low Cumulative Impact	The impact would result in insignificant cumulative effects.
3	Medium Cumulative impact	The impact would result in minor cumulative effects.
4	High Cumulative Impact	The impact would result in significant cumulative effects.

INTENSITY/ MAGNITUDE

Describes the severity of an impact.

1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/ component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/ component, and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very high	Impact affects the continued viability of the system/component, and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired (system collapse). Rehabilitation and remediation often impossible. If possible, rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.

Table 8-2: Significance calculation and ratings.

SIGNIFICANCE

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. This describes the significance of the impact on the environmental parameter. The calculation of the significance of an impact uses the following formula:

$$\text{SIGNIFICANCE} = (\text{Extent} + \text{probability} + \text{reversibility} + \text{irreplaceability} + \text{duration} + \text{cumulative effect}) \times \text{magnitudel intensity.}$$

The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.

Points	Impact Type	Impact Significance Rating	Description
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>-90	Negative	Negative Very High Impact	The impact has highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
-61 to -90	Negative	Negative High Impact	The impact has significant effects and requires significant mitigation measures to achieve an acceptable level of impact.
-31 to -60	Negative	Negative Medium Impact	The impact has moderate negative effects and requires moderate mitigation measures.
-1 to -30	Negative	Negative Low Impact	The impact has negligible negative effects and requires little to no mitigation.
0	Neutral	No Impact	The impact has moderate positive effects.
1 to 30	Positive	Positive Low Impact	The impact has minor positive effects.
31 to 60	Positive	Positive Medium Impact	The impact has moderate positive effects.
61 to 90	Positive	Positive High Impact	The impact has significant positive effects.
>90	Positive	Positive Very High Impact	The impact has highly significant positive effects.

Table 8-3: Example: Rating of impacts

IMPACT TABLE			
	Description	Before Mitigation	After Mitigation
<i>[Environmental Parameter]</i> e.g., Biodiversity	<i>A brief description of the nature of the impact that is likely to affect the environmental aspect as a result of the activity e.g. alteration of aquatic biota The environmental impact that is likely to positively or negatively affect the environment as a result of the proposed activity e.g. oil spill in surface water.</i>		
Extent (Ex)	<i>A brief description indicating the chances of the impact occurring.</i>	4	1
Probability (Pr)	<i>A brief description of the ability of the environmental components recovery after a disturbance as a result of the activity.</i>	4	1
Reversibility (Re)	<i>A brief description of the environmental aspect likely to be affected by the activity e.g. Surface water.</i>	4	1
Irreplaceable loss of resources (L)	<i>A brief description of the degree in which irreplaceable resources are likely to be lost.</i>	4	1
Duration (D)	<i>A brief description of the amount of time the activity is likely to take to its completion.</i>	4	1
Cumulative effect (CE)	<i>A brief description of whether the impact will be exacerbated as a result of the activity.</i>	4	1
Intensity/magnitude (M)	<i>A brief description of whether the impact has the ability to alter the functionality or quality of a system permanently or temporarily.</i>	2	2
Significance Rating	<i>A brief description of the importance of an impact which in turn dictates the level of mitigation required.</i>	-48 (Negative Medium Impact)	-12 (Negative Low Impact)
Mitigation measures	<i>Outline/explain the mitigation measures to be undertaken to ameliorate the impacts that are likely to have risen from the activity. Describe how the mitigation measures have reduced/enhanced the impact with relevance to the impact criteria used in analysing the significance. These measures will be detailed in the EMP.</i>		

8.3. Assessment of Identified Impacts

Impacts that have been identified as being potentially significant are elaborated on in the sub-sections below.

8.3.1. Air Quality Impact Assessment

An AQIA was conducted for Neoserve as part of the EA application process and AEL application process for their facility.

The main findings of the impact assessment are as follows:

- The key emitting activities at the proposed plant are the pyrolysis reactors, which result in the emission of criteria air pollutants (PM, SO₂, CO and NO₂) and several non-criteria air pollutants (HF, NH₃, TOCs, HCl, etc), which have an impact on ambient air quality.
- One point source, i.e., proposed pyrolysis stack, which triggers sub-category 8.1 (thermal treatment of general and hazardous waste) in terms of S21 of National Environmental Management Air Quality Act (No. 39 of 2004) (NEM: AQA), was the focus of this assessment.
- PM₁₀, PM_{2.5}, SO₂, NO₂, CO, HF, HCl, metals, NH₃ and TOCs emission rates from the proposed pyrolysis reactor operations were quantified through an emissions inventory for input into the model. Emission rates were generally low for all pollutants, except NO₂ (i.e., less than 0.1 g/s).
- One scenario was considered in the assessment:
 - New plant standard scenario: where the MES for the proposed plant, i.e. the maximum threshold limit that is allowed for new plants (in terms of PM₁₀, PM_{2.5}, SO₂, NO₂, CO, HF, HCl, metals (Cd-Tl, Hg, sum of Pb+ As + Sb +Cr + Co + Cu + Mn + Ni + V), NH₃, dioxins and furans, and TOCs) as per listed activity sub-category 8.1 (thermal treatment of general and hazardous waste) was considered for input into the model.
 - This is representative of potential impacts if the proposed plant were emitting at the acceptable threshold that is permissible for sub-category 8.1 (thermal treatment of general and hazardous waste). The emission standards were converted into emission rates for input into the model.
- Simulated PM₁₀ and PM_{2.5} concentrations are well below the NAAQS in both the long and short term.
- Simulated short and long-term gaseous concentrations (NO₂, SO₂ and CO) are low and compliant with the relevant NAAQS.
- Simulated short-term HF, HCl and NH₃ concentrations are well below the relevant Alberta Air Quality Guidelines of 4.9 µg/m³, 75 µg/m³ and 1 400 µg/m³, respectively.
- Simulated short-term TOC, dioxins and furans and metal concentrations are well below the assessment criteria within the facility boundary, as well as at offsite locations, thus complying with the applicable international standards and guidelines. Furthermore, simulated TOC concentrations are well below the South African NAAQS for benzene in the long-term.
- Simulated emission levels at all AQSRs modelled in the study (as described in Section Error! Reference source not found.) are low, with no exceedances of the applicable NAAQS, or international standards observed, where applicable.
- Other open-air fugitive emission sources such as vehicle dust entrainment on access roads leading to the plant, as well as the handling of carbon black are also identified as possible sources of emissions at the site. The handling of carbon black will occur intermittently and will be conducted under roof, thus containing any fugitive emissions associated with the handling process within the plant building.
- Furthermore, the access roads leading to the plant are all paved, thus significantly reducing vehicle dust entrainment due to movement of trucks on these roads. Thus, fugitive emissions from these sources were assumed to be minimal and not included in this assessment. Nonetheless, effective and affordable fugitive emission reduction measures should be implemented, where possible and applicable, to reduce the impact of these sources.

With the proposed mitigation measures in place, the significance of current impacts can be further reduced to minimal. Also, the proposed installation of an abatement equipment (scrubbers) which normally has an industrial efficiency of more than 90%, can only see the air quality cumulative impact being low within the surrounding area.

No excessive emissions are associated with the Planning and Decommissioning Phases of the project. However, mitigations have been incorporated in the EMPr.

Table 8-4: Rating of impacts for modelled scenario.

IMPACT TABLE			
	Description	Before Mitigation	After Mitigation
Air Quality	<i>Air Quality will likely be impacted by the pyrolysis reactor operations at the proposed Neoserve pyrolysis plant, through the emission of criteria and non-criteria air pollutants from reactor operations into the atmosphere. However, a gas scrubber and a smoke/water scrubber will be in place to clean gaseous and particulate emissions before they are released into the atmosphere.</i>		
Extent (Ex)	<i>The impact will likely occur and will affect the local area. With implementation of additional, suitable mitigation measures, the impact can be reduced to only affect the project site (i.e., proposed plant area).</i>	2	1
Probability (Pr)	<i>Probability of the impact occurring, considering proposed mitigation measures, is probable, but can be reduced to possible with maintenance and servicing of all process equipment, including the proposed abatement equipment, suitable mitigation measures.</i>	3	2
Reversibility (Re)	<i>Air quality will likely be impacted by the proposed operations at the pyrolysis plant. However, the impact will be partly reversible with the implementation of proposed mitigation measures. The impact will likely cease upon cessation of operations at Neoserve.</i>	2	2
Irreplaceable loss of resources (L)	<i>The impact will likely result in marginal loss of resources.</i>	2	2
Duration	<i>The impact of proposed tyre pyrolysis operations at Neoserve on air quality will last for the operational lifecycle of the facility but can be mitigated by human action.</i>	3	3
Cumulative effect (CE)	<i>The cumulative impact of the proposed pyrolysis plant operations on air quality will be moderate to low, since the project site is in a non-air quality priority area. Furthermore, the proposed pyrolysis plant, as planned, is not expected to be a major source of incremental pollutant emissions at the project site due to the inclusion of a smoke/water scrubber in its design. Thus, the impact will result in low to medium cumulative effects.</i>	3	2
Intensity/magnitude (M)	<i>The impact can alter the functionality or quality of air temporarily, in a way that is barely perceptible, for the duration of the listed activity.</i>	1	1
Significance Rating	<i>Negative Low Impact</i>	-15 (Negative Low Impact)	-12 (Negative Low Impact)
Mitigation measures	<p><i>Mitigation measures that can be implemented to reduce the impact of pyrolysis reactor operations on air quality include the installation of extraction systems and stacks, where applicable, and abatement equipment, if required, which will minimise the level of ground level air pollutants: compliance with the MES for sub-category 8.1 (thermal treatment of general and hazardous waste); and compliance to provisional AEL requirements.</i></p> <p><i>It must be noted that a stack as well as gas and smoke purifying systems (i.e., a gas scrubbing system and a smoke/water scrubbing system), with a spraying tower and an absorption tower are planned to be installed at the proposed plant prior to commencement of operations. The expected stack height is ~ 15 m above ground level.</i></p>		

8.3.2. Socio-Economic Impact Assessment

Planning phase:

There are no impacts associated with the planning phase of this project since the facility already exists.

Construction phase:

Works associated with the construction phase would only emanate from the commissioning of the required operational equipment inside the existing infrastructure building. Commissioning will be contracted to a suitably qualified service provider, who is assumed to make provision for employment of a suitable number of employees in order to carry-out the works. While it is currently impossible to determine, it is assumed that these works will have positive impacts on the socio-economic aspect of the people involved.

Operational phase:

Neoserve plans to employ about thirty (10) new persons during the operational phase of the project. Of the total, about 2 would be office-based with the rest dedicated to operations. Although **Neoserve's** employment contribution may be regarded as low, it forms part of an essential input to the livelihoods of its direct and indirect dependencies.

Where possible, the company also plans to embark on other various corporate social investment projects including, but not limited to, sponsoring a school or pupils, making donations to social care establishments or organizations, etc.

It is further recommended that the nearby low-income townships including Riverlea, must also be prioritized as a source of labour recruitment as much as possible and whenever required.

Decommissioning phase:

Socio-economic impacts of the facility will only cease once the facility has been decommissioned. However, the site infrastructure is perceived as permanent with the operations planned to take place indefinitely to a point where it may be sold to a potential buyer(s). Therefore, no assessment has been done for this phase.

Table 8-5: Socio-economic impact assessment. – Operation

IMPACT TABLE			
	Description	Before Mitigation	After Mitigation
Assessment	<i>Socio-economic aspects affected by the existence of Neoserve.</i>		
Extent (Ex)	Have affect the local area or district.	2	N/A
Probability (Pr)	Impact certainly occurs.	4	N/A
Reversibility (Re)	Impacts occur only as long as the facility remains operational.	1	N/A
Irreplaceable loss of resources (L)	The impact does not result in the loss of any resources.	1	N/A
Duration	Impacts occur only as long as the facility remains operational.	4	N/A
Cumulative effect (CE)	The impact would result in minor cumulative effects, experienced from the employees themselves through a knock-on effect to their induvial dependants.	3	N/A
Intensity/magnitude (M)	Impact affects the continued viability of the socio-economic system/ component.	3	N/A
Significance Rating	Overall socio-economic impacts remain positive for the operational phase of the site.	+45 (Positive Medium Impact)	N/A
Mitigation measures	<ul style="list-style-type: none"> As the impacts are positive in nature, no mitigation is required. It is recommended to utilise local labour available from the nearby informal settlement to maximise the positive impact on the surrounding community. 		

8.3.3. Solid Waste Impact Assessment

Planning phase:

There are no impacts associated with the planning phase of this project since the facility already exists.

Construction phase:

There are no impacts associated with the construction phase which would only include the commissioning of the required operational equipment inside the existing infrastructure building. Commissioning will be contracted to a suitably qualified service provider.

Operational phase:

By-products from the pyrolysis process including char, Carbon Black, fibres, pyrolysis oil and/or steel will be produced from the proposed production processes. Where any of these cannot be re-used or processed further at the site, the possibility of selling them to a third-party recycler, or processor must be explored as priority option. Where any cannot be sold, it must therefore, be disposed accordingly at a licensed landfill site.

General domestic waste such as paper, plastic, organic, glass, etc., shall be placed in separate bins and an accredited waste collector will be appointed to collect it for recycling.

No effluent shall be produced from the proposed production processes.

Decommissioning phase:

The site infrastructure is perceived as permanent with the operations planned to take place indefinitely to a point where it may be sold to a potential buyer(s). As such, waste generated from decommissioning the site facilities are rather explained as mitigations in the EMPr.

As such, the impact significance of the facility's waste is considered low as most of its production waste provide the option to be reused or recycled by Neoserve, or third-party processors.

Table 8-6: Solid waste impact assessment – Construction/ Commissioning

IMPACT TABLE			
	Description	Before Mitigation	After Mitigation
Assessment	<i>Solid Waste Impact. (Construction)</i>		
Extent (Ex)	Impacts during the operational phase remain low as none of the waste ends up at a disposal facility. However, waste from decommissioning of the site may have some local impacts which may be decreased through implementation of mitigations.	2	1
Probability (Pr)	The impact is likely occurring (Between a 50% to 75% chance of occurrence).	3	2
Reversibility (Re)	The impact is partly reversible but more intense mitigation measures are required.	2	2
Irreplaceable loss of resources (L)	The impact results in marginal loss of resources.	2	2
Duration	The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years). However, mitigations may decrease these to almost none.	2	1
Cumulative effect (CE)	The impact would result in minor cumulative effects. Mitigations would result in negligible to no cumulative effects.	3	1
Intensity/magnitude (M)	Impact alters the quality, use and integrity of the aspect but would still continue to function.	2	1
Significance Rating	Description of the importance of the impact which indicates the Mitigation required.	-28 (Negative Low Impact)	-9 (Negative Low Impact)
Mitigation measures	<ul style="list-style-type: none"> For by-products from the pyrolysis process including char, Carbon Black, fibres, pyrolysis oil and/or steel which cannot be re-used or processed further at the site – the possibility of selling them to a third-party recycler, or processor must be explored as priority option. Where any cannot be sold, it must therefore, be disposed accordingly at a licensed landfill site. 		

Table 8-7: Solid waste impact assessment. – Operational Phase.

IMPACT TABLE			
	Description	Before Mitigation	After Mitigation



Assessment	<i>Solid Waste Impact. (Operational phase)</i>		
Extent (Ex)	Impacts during the operational phase remain low as none of the waste ends up at a disposal facility. However, waste from decommissioning of the site may have some local impacts which may be decreased through implementation of mitigations.	2	1
Probability (Pr)	The impact may occur (Between a 25% to 50% chance of occurrence).	2	1
Reversibility (Re)	The impact is partly reversible but more intense mitigation measures are required.	2	2
Irreplaceable loss of resources (L)	The impact results in marginal loss of resources.	2	2
Duration	The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years). However, mitigations may decrease these to almost none.	2	1
Cumulative effect (CE)	The impact would result in minor cumulative effects. Mitigations would result in negligible to no cumulative effects.	3	1
Intensity/magnitude (M)	Impact alters the quality, use and integrity of the aspect but would still continue to function.	2	1
Significance Rating	Description of the importance of the impact which indicates the Mitigation required.	-26 (Negative Low Impact)	-8 (Negative Low Impact)
Mitigation measures	<ul style="list-style-type: none"> For by-products from the pyrolysis process including char, Carbon Black, fibres, pyrolysis oil and/or steel which cannot be re-used or processed further at the site – the possibility of selling them to a third-party recycler, or processor must be explored as priority option. Where any cannot be sold, it must therefore, be disposed accordingly at a licensed landfill site. 		

8.3.4. Resource Usage Impact Assessment

Planning phase:

There are no resource usage impacts associated with the planning phase of this project.

Construction phase:

Electricity, diesel for generators and equipment (trucks, working equipment, etc.), petrol fuel for other vehicular equipment, etc. shall form part of the resources used for energy during construction.

Operational phase:

Neoserve plans to use electricity supplied by Eskom as well as diesel powered backup generators for their operations.

However, the air quality impact of using (especially) diesel generators may be worth considering. A greenhouse gas and or carbon footprint inventory must be conducted to determine the extent of the impacts related to the **use of the facility's energy source(s)** once operations have begun. Please refer to the EMPr for further mitigations in this regard.

Decommissioning phase:

The site infrastructure is perceived as permanent with the operations planned to take place indefinitely to a point where it may be sold to a potential buyer(s). As such, waste generated from decommissioning the site facilities are rather explained as mitigations in the EMPr.

Table 8-8: Neoserve resource impact assessment. – Construction/ Commissioning

IMPACT TABLE			
	Description	Before Mitigation	After Mitigation
Assessment	<i>Resource Usage Impact Assessment (Construction)</i>		
Extent (Ex)	Impacts will remain with effects on the local area or district.	2	2
Probability (Pr)	Impact of using some resources certainly occurs (Greater than a 75% chance of occurrence). However, mitigations	4	2



	would decrease these to a 25% - 50% chance of occurrence.		
Reversibility (Re)	The impact is partly reversible but more intense mitigation measures are required. Where mitigated, reversibility would require implementation of minor mitigation measures	2	1
Irreplaceable loss of resources (L)	The impact results in marginal loss of resources. It may be none with the aid of mitigations.	2	1
Duration	The impact and its effects will continue or last for some time. However, mitigations may result in this impact lasting only for a short term.	2	1
Cumulative effect (CE)	The impact would result in minor cumulative effects. Mitigations would result in insignificant cumulative effects.	2	1
Intensity/magnitude (M)	Impact alters the quality, use and integrity of the aspect but would still continue to function.	2	1
Significance Rating	Description of the importance of the impact which indicates the Mitigation required	-28 (Negative Low Impact)	-8 (Negative Low Impact)
Mitigation measures	<ul style="list-style-type: none"> Please refer to attached EMPr for mitigation measures. 		

Table 8-9: Neoserve resource impact assessment. - Operation

IMPACT TABLE			
	Description	Before Mitigation	After Mitigation
Assessment	<i>Resource Usage Impact Assessment (Operational phase)</i>		
Extent (Ex)	Impacts will remain with effects on the local area or district.	2	2
Probability (Pr)	Impact of using some resources certainly occurs (Greater than a 75% chance of occurrence). However, mitigations would decrease these to a 25% - 50% chance of occurrence.	4	2
Reversibility (Re)	The impact is reversible with implementation of minor mitigation measures.	1	1
Irreplaceable loss of resources (L)	The impact results in marginal loss of resources. It may be none with the aid of mitigations.	2	1
Duration	The impact and its effects will continue or last for some time. However, mitigations may result in this impact lasting only for a short term.	2	1
Cumulative effect (CE)	The impact would result in minor cumulative effects. Mitigations would result in insignificant cumulative effects.	3	2
Intensity/magnitude (M)	Impact alters the quality, use and integrity of the aspect but would still continue to function.	2	1
Significance Rating	Description of the importance of the impact which indicates the Mitigation required	-28 (Negative Low Impact)	-9 (Negative Low Impact)
Mitigation measures	<ul style="list-style-type: none"> Please refer to attached EMPr for mitigation measures. 		

8.3.5. Fire Hazard Impact Assessment

Planning phase:

There are no risks of fires associated with the planning phase of this project. However, safe handling documents must be made available for all hazardous and flammable material.

Construction phase:

During commissioning of the equipment, all fire prevention measures must be followed including material data safety sheets (MSDS) for various chemicals used during this phase.

Operational phase:

There is a potential for fire at any facility that operates, however, the risk is increased with the storage and handling of flammable substances. Neoserve must ensure that relevant emergency response procedures, standard

operating procedures for storing and handling dangerous goods, and firefighting equipment are in place and properly maintained and conduct regular employee training thereon.

Decommissioning phase:

The site infrastructure is perceived as permanent with the operations planned to take place indefinitely to a point where it may be sold to a potential buyer(s). As such, waste generated from decommissioning the site facilities are rather explained as mitigations in the EMPr.

Table 8-10: Fire Hazard impact assessment. – Construction/ Commissioning

IMPACT TABLE			
	Description	Before Mitigation	After Mitigation
Assessment	<i>Fire Hazard Impact Assessment. (Construction & Operation)</i>		
Extent (Ex)	Smoke and fumes from the fire would affect the local area. However, with mitigations, it may be restricted to the site.	2	1
Probability (Pr)	Occurrence of a fire is likely occurring (Between a 50% to 75% chance of occurrence. This may be reduced by the implementation of mitigation measures.	3	1
Reversibility (Re)	Fire impact is irreversible, and no mitigation measures may exist. However, the risk may only be confined within the storage areas in the facility, after mitigations.	3	1
Irreplaceable loss of resources (L)	Fire impact may result in significant loss of resources. Mitigating these may result in marginal loss of resources.	2	2
Duration	Effects will continue or last for some time after occurrence.	1	1
Cumulative effect (CE)	Fire would result in insignificant cumulative effects. This would be decreased to negligible with the aid of mitigations.	1	1
Intensity/magnitude (M)	Impact affects the continued viability of the system/ component, and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation. The severity would likely be minor with the implementation of mitigations.	2	2
Significance Rating	The overall impact is very low due to the low probability of occurrence and impacts will be short lived and mostly restricted to the site.	-24 (Negative Low Impact)	-14 (Negative Low Impact)
Mitigation measures	<ul style="list-style-type: none"> Please refer to attached EMPr for mitigation measures. 		

Table 8-11: Fire Hazard impact assessment. – Operation

IMPACT TABLE			
	Description	Before Mitigation	After Mitigation
Assessment	<i>Fire Hazard Impact Assessment. (Construction & Operation)</i>		
Extent (Ex)	Smoke and fumes from the fire would affect the local area. However, with mitigations, it may be restricted to the site.	2	1
Probability (Pr)	Occurrence of a fire is likely occurring (Between a 50% to 75% chance of occurrence. This may be reduced by the implementation of mitigation measures.	3	2
Reversibility (Re)	Fire impact is irreversible, and no mitigation measures may exist. However, the risk may only be confined within the storage areas in the facility, after mitigations.	4	2
Irreplaceable loss of resources (L)	Fire impact may result in significant loss of resources. Mitigating these may result in marginal loss of resources.	3	2
Duration	Effects will continue or last for some time after occurrence.	2	1
Cumulative effect (CE)	Fire would result in insignificant cumulative effects. This would be decreased to negligible with the aid of mitigations.	2	1
Intensity/magnitude (M)	Impact affects the continued viability of the system/ component, and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and	3	2

	remediation. The severity would likely be minor with the implementation of mitigations.		
Significance Rating	The overall impact is very low due to the low probability of occurrence and impacts will be short lived and mostly restricted to the site.	-48 (Negative Medium Impact)	-18 (Negative Low Impact)
Mitigation measures	<ul style="list-style-type: none"> Please refer to attached EMPr for mitigation measures. 		

8.4. Environmental Management Programme (EMPr)

An Environmental Management Programmes (EMPr), included in Appendix K, has been compiled to provide recommendations and guidelines according to which compliance and monitoring can be done during the construction, operation and decommissioning phases of the Neoserve facility, as well as to ensure that all relevant factors are considered to ensure that they are an environmentally responsible company. Where received and relevant, any other recommendations received from Authorities, Specialists, and relevant organisations during the current Impact Assessment process have also been incorporated in the EMPr.



9. PUBLIC PARTICIPATION

Public participation is a fundamental aspect of any impact assessment process. The Public Participation Process (PPP) followed for the EA Application is to be conducted according to Section 41 of the NEMA EIA Regulations. The PPP includes the provision of sufficient and transparent information on an ongoing basis to stakeholders to allow them to comment and ensuring the participation of all interested and affected parties (I&APs).

The PPP is based on two primary factors; firstly, ongoing interaction with concerned organs of state, environmental specialists and the technical teams to achieve integration of technical assessment and public participation throughout. Secondly, to obtain the bulk of the issues to be addressed early in the process, with the latter half of the process designed to provide environmental and technical evaluation of these issues.

The primary aims of the PPP are:

- To inform I&APs and key stakeholders of the development.
- To initiate meaningful and timeous participation of I&APs.
- To identify issues and concerns of key stakeholders and I&APs with regards to the development
- To promote transparency and an understanding of the project and its potential environmental impacts.
- To provide information used for decision-making.
- To provide a structure for liaison and communication with I&APs and key stakeholders.
- To assist in identifying potential environmental impacts associated with the development.
- To ensure inclusivity (the views, needs, interests, and values of I&APs must be considered in the decision-making process).
- To focus on issues relevant to the project and issues considered important by I&APs and key stakeholders.
- To provide responses to I&AP queries.
- To encourage co-regulation, shared responsibility and a sense of ownership.

9.1. Public Participation Process

As per the NEMA EIA Regulations, the following public participation is currently underway:

It must be noted that the public participation commenced on the 1st of November 2023 and shall run for at least thirty (30) days, excluding holidays and closure dates in terms of the National Environmental Calendar. Proof documents for some of actions taking throughout the process will be included as Annexures of the final report.

9.2. Site notices

Site notices will be affixed at the entrances of the facility for the duration of the PPP. Proof photographs of this will be included in the final report.



Specifications of the site notices will be A2 (594 x40 mm) with information in accordance with the requirements of Section 41 of the NEMA EIA Regulations.

9.3. Newspaper advertisement

Public notifications of the application process will be advertised in one (1) local newspaper. Proof of the adverts will be included in the final reports.

9.4. Background information document

A Background information document (BID) was compiled at the commencement of the project detailing the project and the application process to be followed. The BID has been made available to all registered I&APs and Key Stakeholders. Proof of the sent BID shall be included in the final reports.

BID will also be circulated via emails and a copy will be made available on the Projects page on the Environmental Edge’s website: <https://environmentaledge.co.za/projects/> .

9.5. Written notices

Written notices were circulated via emails and a copy will be made available on the Projects page on the Environmental Edge’s website: <https://environmentaledge.co.za/projects/> during the course of the PPP period.

9.6. Social media and website notifications

Notices about the project were posted on Environmental Edge’s social media platform pages with a link redirecting to the Projects page on the website: <https://environmentaledge.co.za/projects/> .

Environmental Edge’s social media pages information:

Table 9-1: Social Media Information where project notifications were posted.

Platform	Handle	Link
Facebook	@EnvironmentalEdgeSA	https://web.facebook.com/EnvironmentalEdgeSA
Linkedin	@Environmental_Edge	https://linkedin.com/in/environmental-edge-26167719b
Twitter	@EnviEdge	https://twitter.com/EnviEdge

9.7. Comments and Response Register

All written comments received from I&APs during the application process will be recorded in the comments and response register. A Comments and Responses Report (C&RR) is compiled as a summary of all issues raised, as well as responses provided to I&APs.

Were relevant, information will be incorporated into relevant impacts and mitigations in the Final Impact Assessment Report and in the Management Plan/ Programmes. A copy of the C&RR will be included in the final report.

9.8. Authority Review of the Draft Impact Assessment Report

In terms of section 40 (2) of the 2014 EIA Regulations (as amended), public participation must include consultation with “organs of state which have jurisdiction in respect of the activity to which the application relates”.

The table below includes all the organs of state who have been emailed the PPP notification and afforded the chance to submit comments on the full report including all appendices. Telephonic and/ or email follow-up with stakeholders will be done in order to provide them with ample opportunity to comment.

Table 9-2: Authorities follow-up consultation

DISTRIBUTION TO ORGANS OF STATE/AUTHORITIES FOR COMMENT				
Name	Surname	Company/Department	Position	Email Address
GAUTENG DEPARTMENT OF AGRICULTURE, RURAL DEVELOPMENT AND ENVIRONMENT (GDARDE)				
Ms Lerato	Lukhele	GDARDE	WML Authority	Lerato.Lukhele@gauteng.gov.za
Ms. Lungile	Mkhungo	GDARDE	Compliance Monitoring	Lungile.Mkhungo@gauteng.gov.za
Ms. Nkhumeleni	Rambasa	GDARDE	Pollution and Waste Management	Nkhumeleni.Rambasa@gauteng.gov.za
Ruth	Siminya	GDARDE	Air Quality Manager	Ruth.siminya@gauteng.gov.za
WEST RAND DISTRICT MUNICIPALITY				



Susan Stoffberg	Air Quality Management	Air Quality Official	sstoffberg@wrdm.gov.za
MOGALE CITY LOCAL MUNICIPALITY			
Madikana Thenga	Integrated Environmental Management	Environmental Manager	<u>TBC</u>

10. RECOMMENDATIONS AND CONCLUSIONS

10.1. Summary of Findings and Recommendations

A summary of the findings and recommendations for each of the significant and assessed environmental aspects is provided in Table 10-1 below. Other environmental aspects identified to be potentially affected by the existence of Neoserve are elaboratively included in the EMPr with specific recommended mitigations.

Table 10-1. Summary of Findings and Recommendations.

Aspect	Fatal flaws	Outcomes & Recommendations
Air Quality	None	<p>Construction Phase:</p> <ul style="list-style-type: none"> Minimize the surface area of exposed soil and fine construction materials to wind erosion. Ensure implementation of mitigation measures for fume and smoke emissions; including but not limited to the following: <ul style="list-style-type: none"> Prohibit any fires; and Prohibit burning of wastes/refuse. Make use of cloth or brush barrier fences (where appropriate); Cover dumps with plastic sheeting (except for topsoil stockpiles); Prohibit the use groundwater and water from wetlands for dust suppression; and Maintain vehicles and other driven machinery regularly to ensure that no smoke is emitted from exhausts (construction/ commissioning and operational phase). <p>Operational Phase:</p> <ul style="list-style-type: none"> The proposed facility must install abatement equipment (baghouse and scrubber). The abatement equipment must achieve at least 90% control efficiency and must ensure compliance with the minimum emission standards in terms of Section 21 of the NEM:AQA listed activities. <p>Additional recommendations include:</p> <ul style="list-style-type: none"> Neoserve must apply for an AEL prior to the commencement of operations. All conditions of the AEL must be complied with. Appoint a responsible person, such as an emission control officer or safety, health & environmental manager, to ensure compliance with the AEL. Once operational, conduct stack emissions monitoring on all stacks for the relevant listed activity and ensure compliance with the minimum emission standards, with the use of abatement equipment. Ensure that monitoring is undertaken in accordance with nationally or internationally acceptable methods. Ensure that all unit processes & apparatus used for undertaking the listed activity in question, and all appliances and mitigation measures for preventing or reducing emissions, are at all times properly maintained and operated. Submit an annual AEL report within the required timeframe. Submit compliance audit reports annually.



Mitigations for identified impacts



		<ul style="list-style-type: none"> Once operational, maintain and report monthly to the authority a complaint register. Should a complaint be logged, a report in the required format as per the AEL, should be submitted to the authority. Register and report on the NAEIS. Category A (listed activities) are required to report their emissions on the NAEIS annually. The NAEIS is a national emissions inventory. Undertake regular training of all key employees to ensure effective implementation of the AEL requirements, maintenance and pollution prevention plans.
Waste	None	<p>All Phases:</p> <ul style="list-style-type: none"> Appropriately labelled waste receptacles should be available throughout the site; For by-products from the pyrolysis process including char, Carbon Black, fibres, pyrolysis oil and/or steel which cannot be re-used or processed further at the site – the possibility of selling them to a third-party recycler, or processor must be explored as priority option. Where any cannot be sold, it must therefore, be disposed accordingly at a licensed landfill site. Non-hazardous solid waste generated from the normal operation of the site should be disposed of in the correct manner at a registered general waste disposal site. Such waste can be collected by the Municipality as part of its regular service or removed by a reputable contractor; Recycling of general waste should be encouraged with the use of appropriately labelled recycling receptacles according to waste types in terms of Section 26 of the NEM: WA; Solid waste deemed to be contaminated and non-recyclable must be stored and handled in accordance with appropriate regulations. Any removed waste should be transported to an appropriate hazardous waste disposal facility; All material used for the mopping up of surface spillages should be stored in a container labelled “used material” and removed on a regular basis an approved hazardous waste disposal contractor. The company must register with the Gauteng Waste Inventory System (GWIS) for the activities included in their approved WML and report on the system, their waste volumes on a monthly-basis.
Socio-Economic	None	<p>All Phases:</p> <ul style="list-style-type: none"> As the impacts are positive in nature, no mitigation is required; It is recommended to utilise local labour available from the nearby informal settlement to maximise the positive impact on the surrounding community.
Resource Usage	None	<p>All Phases:</p> <ul style="list-style-type: none"> Neoserve should consider implementing the following at their site; <ul style="list-style-type: none"> Energy efficient equipment; Energy efficient lighting; Lighting linked to motion sensors; Solar energy where possible; Rainwater harvesting;



		<ul style="list-style-type: none"> ▪ Grey water recycling.
Fire Hazard	None	<p>All Phases:</p> <ul style="list-style-type: none"> • All equipment associated with the storage of dangerous goods must be well maintained as required using approved contractors; • Neoserve must ensure that sufficient training is presented to the operators of the facility and personnel utilising the chemicals and/or gas. Training must include general site operation, spill response and emergency procedures and site safety; • In case of an incident the Neoserve Emergency Response Procedure must be followed; • Safety signage must be systematically placed around the site. These include, “no naked flames; no smoking; safety clothing”; • The fire department must immediately be informed of any fires that occur on site; • The facility must ensure that a spill kit is available on site and must be used to timely clean any spillages which may occur.
Surface Water	None	<p>Construction/ Commissioning Phase Recommendations:</p> <ul style="list-style-type: none"> ○ Contractor laydown areas and material storage facilities must be placed within the study area; ○ All vehicle re-fuelling is to take place on a sealed surface within the study area; ○ All development footprint areas to remain as small as possible and vegetation clearing to be limited to what is absolutely essential; ○ Retain as much indigenous vegetation as possible; ○ Excavated materials should not be contaminated, and it should be ensured that the minimum surface area is taken up, however, the stockpiles may not exceed 2m in height; ○ All exposed soils and temporary stockpiles must be protected for the duration of the construction phase in order to prevent erosion; and ○ Immediate revegetation of all stockpiles which are to remain on site post-construction. <p>Operational Phase Recommendations:</p> <ul style="list-style-type: none"> ○ Clean and dirty water management must take place in order to prevent contaminated runoff from the facility creating preferential flow paths which may reach wetlands or join any nearby stormwater drains. Clean and dirty water management systems must be implemented prior to commencement of construction; and ○ Suitable waste disposal facilities should be provided. These facilities should regularly be emptied and taken to a registered waste disposal facility; and ○ All recyclable waste should be recycled as far as possible.
Soil and Land Capability	None	<p>Construction Phase Recommendations:</p> <ul style="list-style-type: none"> ○ All development footprint areas to remain as small as possible; ○ Laydown areas should be located within disturbed soils (anthrosols) to avoid compaction of natural soils; ○ All exposed soils and temporary stockpiles must be protected for the duration of the construction phase in order to prevent erosion; ○ Stockpile heights should not exceed 2 meters. ○ Vehicle re-fuelling is to take place on a sealed surface within the study area; and ○ Contamination prevention measures should be addressed in the Environmental Management Programme (EMPr) for the proposed development, and this should always be implemented and made available and accessible to the contractors and construction crew conducting the works on site for reference.



		<ul style="list-style-type: none"> o Limit soil compaction caused during construction of the proposed structures by allocating a specific traffic path during construction. Establish lawn to limit soil erosion and manage surface runoff. <p>Operational Phase Recommendations:</p> <ul style="list-style-type: none"> o All vehicles should remain within demarcated roads as far as practically possible; o Stormwater management must take place to prevent contaminated runoff from the precious metal refinery facility; o Waste product should be recycled as best as practically possible to minimise sources of soil contamination; and o Contamination prevention measures should be addressed in the EMPr for the proposed development, and this should be implemented and made available and accessible at all times to the contractors and construction crew conducting the works on site for reference. o Establish lawn to limit soil erosion and manage surface runoff.
Heritage	None	<p>There are no sites or places of heritage significance in close proximity to Neoserve. The closest is the Rahima Moosa Grave, Newclare Cemetery which is located about 929.10 m west of the site.</p> <p>However, should there be any discovery of any items resembling any heritage (archaeological and or palaeontological) importance, all operations must immediately be halted. A Heritage Specialist must then be appointed to confirm significance of such items and further (where necessary) assist in acquiring a removal and continuation of activities' permit from the relevant authorities.</p>
Traffic	None	<p>All Phases:</p> <ul style="list-style-type: none"> o Vehicles are to utilise the relevant entrance/exit points of the site. o Vehicles should avoid travel routes that may pass through residential areas. Only the planned access routes should be used. No new access routes should be created without the necessary approvals. o No closure of roads should be done without the necessary approvals. o Mitigation measures identified in the EMPr should be implemented where relevant. o It must be ensured that there is sufficient space on site for vehicles and, as such, delivery vehicles should not obstruct the access roads. o It must be ensured that the access road is in good condition and that all forms of damage are reported to the local authority. o During periods of high traffic entering and exiting the site, it is recommended that flagmen should help direct the traffic. This will enable the safe movement of facility and public traffic at the entrance and reduce the number of potential conflicts.
Visual	None	<p>Construction Phase:</p> <ul style="list-style-type: none"> o No rubble should be disposed of randomly within the site, but at relevant removable bins, where recyclable and non-recyclable waste is kept separate; o Contractor's laydown areas and temporary storage facilities should be located within the development footprint and cordoned off with shade cloth to conceal and minimise the visual impact; o Any topsoil stockpiled should either be utilised during landscaping or it should be shaped and rounded to blend in with the surrounding landscape and to minimise visual contrast; o Vegetation, especially large and tall trees bordering north of the site should be retained if feasible; o It must be ensured that the buildings fit into its surroundings through the appropriate use of colour and material selection. Natural Colours should be used in all instances. Should the stacks comprise metal surfaces, it must be painted in a colour that blends in with the natural environment. White structures are to be avoided;



- o Dust control measures may include, but is not limited to; watering of the footprint area and any access roads, speed limits of 20km/h must be adhered to and should it be practical stockpiles should be covered with a tarpaulin on windy days to avoid soil and dust being blown away;
- o Construction activities should be restricted to daylight hours as far as possible;
- o A lighting engineer may be consulted to assist in the placement of temporary and permanent light fixtures, to reduce the visual impact associated with glare and light trespass; and
- o No naked / unshielded light sources are to be used. It is recommended that "full cut-off" light fixtures that direct light only below the horizontal is to be used.

Operational Phase:

- o It is recommended that routine maintenance on buildings and other structures be implemented, to ensure that the paint of buildings is not weathered and that the buildings fit into the colour palette of the surroundings;
- o In the event that a green open space is demarcated and landscaped, it must be ensured that the vegetation be maintained and controlled to reduce the risk of potential alien floral species proliferation and to keep it aesthetically appealing to the receiving environment;
- o It is recommended that maintenance activities should not take place at night or on weekends, unless absolutely essential;
- o Making use of motion detectors on security lighting at buildings and parking facilities, ensures that the site will remain in relative darkness, until lighting is required for security and maintenance purposes; and
- o No naked / unshielded light sources are to be directly visible from a distance.



Overall environmental statement

11. ENVIRONMENTAL IMPACT STATEMENT

The environmental impact statement provides an account of the key findings of the impact assessment process. Referring to the significance rating summary in the table below, it is evident that although the development imparts negative impacts, most of them are of low significance before and post-mitigation.

All environmental impacts were found to have low significance to their respective aspects. The proposed project has a significant need and desirability as it provides mitigations against the increasing number of recorded waste tyres and its associated challenges in the country.

Additionally, the proposed development and its existence will significantly influence the country's tyre pyrolysis market in addition to having favourable socio-economic effects through the creation of jobs and contributions to the WRDM's overall GDP.

Table 11-1: Summary of Environmental Impact Significance Ratings.

Assessed Impact	Rating before Mitigation	Rating Post-Mitigation
Air quality (Operation)	Negative Low Impact	Negative Low Impact
Socio-economic (Operation)	Positive Medium Impact	N/A
Solid waste (Construction/ Commissioning & Operation)	Negative Low Impact	Negative Low Impact
Resource usage (Construction/ Commissioning & Operation)	Negative Low Impact	Negative Low Impact
Fire Hazard (Construction/ Commissioning)	Negative Medium Impact	Negative Low Impact
Fire Hazard (Operation)	Negative Low Impact	Negative Low Impact



Conclusions drawn from this professional scientific assessment

12. CONCLUSION

Relevant environmental issues have been identified and assessed and rated according to their significance. Mitigation measures have been considered where relevant, and an Environmental Management Programme has been developed.

The successful implementation of relevant management procedures and mitigation measures during the operational phase, as described in this report (including the environmental management programme) will ensure that the impacts of the activity are minimal.

During the rating and ranking procedure of possible impacts, no impact had a “no-go” implication for aspects of the project and all impacts could be successfully countered by appropriate mitigation. Significance ratings following mitigation remain *Negative Low*. Therefore, it is recommended that the continuation of the activity(ies) be approved.

The following aspects were taken into consideration when coming to this conclusion:

- The site is located within an appropriate “Industrial 2” zoned area;
- The activity provides socio-economic benefits to its employees and the wider economy of the manufacturing industry;
- The need and desirability of such processes to mitigate against the increasing waste tyre problems in the country;
- The pollution associated with the functioning of the activity is minimal and does not have a significant impact on the surrounding environment.
- No impacts are rated high significance prior to or following mitigation.
- Neoserve has expressed its commitment to ensuring all possible environmental mitigation measures are incorporated into the operations of the activity, and that the company aims to abide by all relevant environmental legislation.

It is recommended that the activity be approved, subject to the following:



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- All mitigation measures as detailed in this report are to form an extension of the WML, thus ensuring applicant/operator adherence;
 - The specific conditions as detailed in the WML are to be enforced on site;
 - The Environmental Management Programme should become a binding document on site. The EMPr must also be binding to all contractors associated with Neoserve who would be conducting any works at the site.
 - An appropriately qualified and accredited external Environmental Control Officer should be appointed to audit the project at least once every twelve (12) months. A compliance audit report must be compiled against the conditions of the WML and must be submitted to the authorities within sixty (60) days after completion.
 - Incidences of non-compliance by employees, contractors and site operators should be dealt with in a manner so as to ensure practical control and avoidance of any transgressions.



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